

Pounamu] by Current Basin. High and mountainous in all its extent, the coasts are sombre, escarped, and savage on the west, which looks out on Tasman Bay; but its aspect is much softer on the side of Admiralty Bay; there are even some very pleasant sites there. The island is twenty miles from north to south, and something under eight from east to west. The officers of the "Astrolabe," impressed with the desire to perpetuate the memory of their captain, wished his name to be attached to that part of the discoveries of the voyage, and he did not think it well to refuse that mark of esteem on the part of his brave companions. The name of D'Urville Island therefore will remain until the epoch when we shall learn the name it has already received from its inhabitants. [D'Urville Island is known to the Maoris as Rangi-toto; but even now, eighty years after the French captain's visit, it is better known by the name given it by his officers. The observation made by the celebrated French explorer in the last sentence quoted shows how fully he recognised the propriety of retaining the Native name of places, and is in keeping with the broad-minded views expressed all through his narrative.]

We may leave the "Astrolabe" here, to follow at a later period the interesting account of her stay at Tologa Bay and Auckland.

ART. XLI.—*Notes on Botanical Nomenclature; with Remarks on the Rules adopted by the International Botanical Congress of Vienna.*

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[Read before the Auckland Institute, 28th August, 1907.]

At the present time all competent authorities recognise that natural science can make no satisfactory progress without a definite system of nomenclature, applicable to all countries, and available for the use of all workers. Names in the vernacular of any country, though convenient enough for local purposes, have the fatal defect of being, as a rule, intelligible in that country alone, and, in addition, are often ambiguous and uncertain in their application. It can be taken as an established fact, therefore, that in examining the species of any flora or fauna, for any purpose whatever, technical names must be employed if it is desired to fix the species under observation

and to make their recognition by subsequent workers a matter of certainty.

The binomial, or binary, system of botanical nomenclature, which is the method now universally employed, was devised by the celebrated Linnæus, the bicentenary of whose birth has this year been fittingly commemorated. Under it all those species which agree in the possession of certain characters are collected into a group called a genus, to which a substantive name (*Clematis*, for instance) is applied. This name, which is common to the whole of the species of the group, is called the generic name. In addition to this, each one of the species is distinguished by a separate adjectival name, called the specific name; for instance, *Clematis indivisa*. Thus every species has two names—the first, or generic name, indicating the genus to which the species belongs; the second, or specific name, pointing out the particular species. It is this combination of the generic name with the specific epithet that constitutes the great merit of the system invented by Linnæus. Under it, a means is provided by which every known species of plant may have a technical name of its own, by which it can be known to all botanists, and which at the same time is readily distinguishable from the name of any other plant. Its simplicity and ease of application secured its immediate acceptance; and now, after the lapse of more than a hundred and fifty years from its inception, it can be said that no serious attempt has ever been made to depart from its leading principles.

But, although no one proposes to dispense with the binomial system, its practical working has, through a variety of causes, become exceedingly difficult and troublesome. Instead of stability of nomenclature, which is clearly the point to be aimed at, we have arrived at a chaotic state of uncertainty, which has a seriously deterrent effect on the study of systematic botany, even if it is not fast bringing it into contempt. The reasons for this regrettable state of affairs may be briefly particularised as follows:—

The botanical nomenclature of Linnæus is now usually considered to date from the publication of the first edition of his “*Species Plantarum*” in 1753. For many years after this date no difficulties of importance arose, although the absence of any code of rules, or even of any well-defined understanding as to modes of procedure, encouraged a laxity of practice sure to create trouble in the future.

Unfortunately, the idea of the inviolability of the specific name, when once conferred, now considered to be a point of the first importance, was of slow growth, so that eminent botanists, on the most flimsy pretexts, did not hesitate to alter or even

reject names given by their own contemporaries. Then, as time went on it became apparent that many of the genera established by Linnæus or others of the early systematists required alterations in their characters. Some were much too extensive in their scope, and had to be divided into two or more; others were seen to be too closely allied, and had to be merged. All these changes involved alterations in nomenclature. And as the opinions of different authors working upon the same genera or groups of genera were naturally and probably unavoidably diverse, and as these opinions were often based upon totally different ideas as to the limitations of both genera and species, it followed, as a matter of course, that the resultant nomenclature was different. In the early days of botanical research, too, botanists were often imperfectly acquainted with each other's work. It often happened that two authors, working unknown to one another upon similar material, would independently propose new generic or specific names for the same plants. And although there was a vague understanding that the name first published was the valid one, it often occurred that the oldest name was not at first recognised, either from being described in some obscure publication with a small or purely local circulation, which consequently escaped the attention of botanists, or on account of the superior influence or position of one of the workers. It would be easy to enumerate other causes leading to disputed or uncertain nomenclature; but enough has been said to show that, with the progress of systematic botany, the nomenclature of the science yearly became more involved and difficult of application.

About 1865 the eminent botanist Alphonse de Candolle was induced to take up the question. After much careful study, and after an extensive correspondence with the leading botanists of the time, he prepared a code of rules or laws of nomenclature for the guidance of authors in the future. This code was submitted to an International Congress of Botanists held at Paris in 1867. It was then fully discussed, and, with a few unimportant alterations, accepted and issued to the world under the title of "*Lois de la Nomenclature Botanique adoptées par le Congrès International tenu à Paris en Août 1867.*" These laws embodied many essential principles, were well arranged and carefully drafted, and must be considered as constituting a decided step in advance. It was clearly laid down that in all cases of synonymy the earliest-published name, if accompanied by a sufficient description, should take precedence over names of later date; and this law was made retrospective, no doubt with the intention of providing that disputed questions of old date should be settled by the application of a fixed rule rather

than by the preference of individual botanists or groups of botanists. But, notwithstanding the many excellencies of De Candolle's laws, and the fact that they received the nominal acceptance of botanists, it cannot be said that they were altogether successful. I have no intention of taking up space by inquiring into the reasons for this; but it may be profitable to discuss one or two points upon which the opinions of botanists differed, and which, in the absence of any definite rule, became the subject of much discussion, ultimately leading to still greater confusion of nomenclature.

As already mentioned, De Candolle provided that the first-published name should take precedence of all those issued at later dates. Now, this rule can be interpreted in two ways. By one school of botanists it is taken to mean that the specific name, when once applied, is absolutely unchangeable. The original author may have failed to place it under its proper genus, either through ignorance or neglect, or through a desire to avoid the multiplication of genera. But this matters nothing; under the rule the specific name first given to a plant belongs to it, and when changes of classification take place, and the plant is transferred from one genus to another, the name must be transferred with it; or, to put the matter in the forcible words of a well-known writer, the "specific epithet once given is indelible, and, whatever the taxonomic wanderings of the organism to which it was once assigned, it must always accompany it." But by another section of botanists it is held that the name entitled to priority is that under which a given plant was first placed in its *true* genus, even if the author had deliberately passed over pre-existing specific names under other but incorrect genera. At first sight this rule appears harsh, as it clearly refuses to recognise the work of the first describer of a plant, if he fails to place it in the proper genus; but, after all, it must be borne in mind that the object of botanical nomenclature is, as Mr. Bentham long ago pointed out, "the ready identification of species, genera, or other groups for study or reference, not the glorification of botanists." In the introduction to the "Flora of British India," Sir J. D. Hooker pertinently remarks "that a right comprehension of genera is of higher importance than the power of describing species. The number of species described by authors who cannot determine their affinities increases annually, and I regard the naturalist who puts a described plant into its proper position in regard to its allies as rendering a greater service to science than its describer, when he either puts it into a wrong place, or throws it into any of those chaotic heaps miscalled 'genera,' with which systematic works still abound." But the strongest

argument in favour of adopting the earliest combination in the accepted genus as the rightful name of any plant is its simplicity and ease of application. It is comparatively easy to determine the first name applied to a plant in its correct genus; but it is often exceedingly difficult to ascertain the oldest name under any genus whatever. To settle such a point frequently demands a vast amount of bibliographic work, sometimes involving references to obscure publications often quite forgotten in their own country, and not always to be found in the largest public libraries. Such labour cannot be well described by any other terms than tedious, wearisome, and even repulsive.

Although published many years ago, it may not be without interest to quote the opinions of the renowned American botanist Asa Gray on this subject: "To keep up the name under which any plant is first placed in its true genus is simple, thoroughly practicable, and, in my opinion, most conformable to accepted rules, as well as most conducive to fixity of names. It is reasonable enough, under the stringent rule of priority, to resuscitate neglected older specific names pertaining to their proper genus; but surely it is unreasonable and inconsiderate to conclude any such right to specific names out of the genus to which they are subordinate" ("Journal of Botany," 1887, p. 355).

The following example will illustrate the working of the two interpretations of the Candollean law of priority. The genus *Haloragis* was founded by Forster in the year 1776, the type being a New Caledonian plant, to which he applied the name of *Haloragis prostrata*. In 1780 Murray proposed a genus called *Cercodia*, his type being *Cercodia erecta*, from New Zealand; but this genus has long ago been abandoned, all botanists considering it to be identical with *Haloragis*. In 1781 the Austrian botanist Jacquin described the species *Haloragis alata*, from New Zealand. It was soon ascertained that this was identical with Murray's *Cercodia erecta*, and the question at once arose as to which of the two names should be retained. Now, those botanists who believe that the earliest appellation under any genus is the only valid name will, of course, take the specific name of *erecta*, combining it with the generic term *Haloragis*. This course has recently been followed by Anton Schindler in his monograph of the family ("Das Pflanzenreich," Heft 23, p. 49). But those who hold the view that the earliest name in the correct genus is the one to be adopted will use the term *Haloragis alata*; and under this appellation the plant will be found described in Bentham's "Flora Australiensis," Hooker's "Handbook of the New Zealand Flora," and my own "Manual." Of course, the above is a simple case, and, were all questions of

nomenclature capable of such easy determination, little more would be wanted than an agreement amongst botanists themselves as to the mode of procedure. But in cases where the species has been repeatedly shifted from genus to genus, and where botanists with very diverse views have worked more or less independently of each other, and perhaps without taking much trouble to ascertain what was already published, it is a matter of the very greatest difficulty to ascertain the earliest name. For instance, the late Mr. C. B. Clarke informed me that over eighty different names have been applied to the plant now usually known as *Scirpus cernuus*.

Another point which has led to much difference of opinion, and has produced many changes of names, is that several botanists working shortly after the times of Linnæus were not sufficiently careful in characterizing their new genera. In some instances it has been absolutely impossible to identify them; in others the identification is uncertain, and cannot be relied upon; while in not a few cases the genera were not recognised until other names had been proposed and passed into general use. In the latter case there has been much doubt as to the propriety of restoring such names, seeing that their adoption must cause great disturbance of nomenclature and great inconvenience to working botanists. The following example will make this clear:—

Most New Zealand botanists are acquainted with *Spergularia media*, a common plant in coastal districts throughout the Dominion, and equally abundant in many other parts of the world. The genus *Spergularia*, in which it is usually placed, was founded by J. and G. Presl in 1819. In 1820 the Swedish botanist Fries objected to its retention, on the ground that the genus had not been fully characterized; and, at his suggestion, Wahlenberg proposed the name of *Lepigonum* to take its place, our plant thus becoming *Lepigonum medium*. Shortly afterwards it was discovered that in Adanson's "Familles des Plantes" (vol. 2, p. 507), published in 1763, two genera respectively called *Buda* and *Tissa* were shortly characterized, which were evidently synonymous with *Spergularia*. As the descriptions of both genera occur on the same page, neither can claim priority over the other. According to the Candolleian laws (article 55), in such cases an author can choose the name which he prefers. Dumortier, writing in 1827, selected *Buda*, which would make the name of our plant *Buda media*. But the change did not meet with the approval of the botanists of that time, and Presl's name of *Spergularia* passed into general use. Sixty years later, when the trend of opinion amongst systematists had become more favourable to the strict enforcement of the rule of priority,

the American botanists Greene and Britton revived the name of *Tissa*, arguing that as its description, although on the same page, stands before that of *Buda*, it was entitled to priority. Under this view, which was adopted in Engler and Prantl's "Pflanzenfamilien," *Spergularia media* became *Tissa media*, and this name has been taken up by Dr. Cockayne in his "Report on the Island of Kapiti." It will be noticed that the species has been placed, in turns, in four genera at least; and, as the question of "sufficient description" has been raised with respect to most of them, it is not at all clear which name is really entitled to take precedence. No wonder that those botanists who consider that nomenclature is, after all, nothing more than a means to an end should object to the useless confusion thus occasioned. No wonder, too, that it should be argued that names which have passed into general use, and which for a long succession of years have been employed in important systematic publications by different authors, should not be disturbed in favour of long-forgotten names disinterred from obscure publications by a zealous innovator. It is satisfactory to know that the Vienna Congress has adopted this view, and that *Spergularia*, together with numerous other genera, are included in the "Nomina Conservanda," or list of names which must in any case be retained.

Many altogether useless changes of names are due to the fact that botanists have never been in satisfactory agreement respecting a starting-point for the binomial system of nomenclature. No doubt there has been a growing feeling in favour of taking the appearance of the first edition of the "Species Plantarum" of Linnæus in 1753 as the date of the first authoritative publication in systematic nomenclature. But there was no decided rule on the subject, and there are always people who scorn to follow the opinion of the majority, even where it is clearly conducive to the general convenience. Thus, some botanists have adopted the date of publication of the first edition of the "Genera Plantarum" in 1737; others that of the appearance of the "Systema Naturæ" in 1735; while there are still others who go back to pre-Linnean times, and accept names proposed by Tournefort, Ray, Dodoens, and others of the early botanists. Under such conflicting views confusion and disorder are unavoidable. Without dwelling upon this portion of the subject, it may be briefly stated that Linnæus did not perfect his system of botanical nomenclature until the publication of the "Species Plantarum," which contains his matured views. It is clearly unwise, as well as unfair, to base a system of nomenclature on his early works, all of which are more or less incomplete, or wanting in detail. As for taking up pre-Linnean

names, it is hard to imagine what arguments can be advanced in favour of the proposal, while it is easy to see the many inconveniences which would result. And, if it be allowable to go back to the times of Ray and Gerard, there is no logical reason to prevent authors from making still more extensive excursions into the realms of antiquity, and quoting as authorities Virgil, Pliny, or Aristotle.

The foregoing remarks will give a general idea of the many difficulties which surround the question of botanical nomenclature. Before proceeding further, it is perhaps advisable to say a few words about the work of the late Otto Kuntze as a "reformer" in nomenclature, more especially as his publications, and the extraordinary number of changes proposed therein, constituted one of the chief reasons for summoning the Vienna Congress. His principal work is the "*Revisio Genera Plantarum*," the three volumes of which were published at intervals between the years 1891 and 1898. Although fully aware that botanical nomenclature, as devised by Linnæus, was not matured until the appearance of the "*Species Plantarum*" in 1753, he nevertheless takes as his starting-point the date of the publication of the first edition of the "*Systema Naturæ*" in 1735. This being settled, he next proceeds to give every publication that appeared after 1735 an equal value for the purposes of botanical nomenclature, and to rigidly enforce the application of the law of priority. Previous workers, as a rule, only concerned themselves with nomenclature when monographing a particular genus or family; with them, at any rate, it occupied a secondary position. But Dr. Kuntze boldly placed it in the forefront; and, at a vast expenditure of time and labour, instituted a systematic search through the whole of the botanical literature of the latter half of the eighteenth century, apparently for the express purpose of hunting out generic names of prior date to those commonly accepted. It is best to take his own statement as to the results of that portion of his work included in the first two volumes of the "*Revisio*." He says that he has monographed 109 genera; sunk 151 genera; renamed 122 genera, because they bore names identical with or similar to those of older genera; changed the names of 952 genera to older names, under the operation of the law of priority; and, finally, as the result of the above changes in generic names, has renamed more than 30,000 species. Sweeping changes of this character sap the very foundations of botanical nomenclature, and threaten to plunge it into a confusion tenfold greater than that from which it was rescued by Linnæus. Let us briefly examine some of the alterations in well-known and long-established names which we are asked to accept.

Taking the New Zealand genera first, as coming more directly under our notice, we find that the well-known name *Astelia*, published by R. Brown in 1810 from Banks's and Solander's MSS., gives place to the forgotten *Funckia*, published by Willdenow two years earlier; the equally familiar *Cordyline* (1789) is replaced by *Terminalis* (1744); *Luzula* (1805) is changed to *Juncodes* (1763); *Knightia* (1810) becomes *Rymandra* (1809); *Pimelea* (1788) gives place to *Banksia* (1776); *Calystegia* (1810) is changed to *Volvulus* (1791); *Wahlenbergia* (1814) is sunk in favour of *Cervicina* (1813); and so on. Altogether, between thirty and forty genera of New Zealand plants, if not more, receive new names, involving corresponding changes in the specific names of not far from 100 species.

Among plants cultivated in gardens we find such alterations as the following: *Pelargonium* becomes *Geraniospermum*; *Tropæolum* is changed to *Trophæum*; *Oxalis* is replaced by *Acetosella*; *Bambusa* gives place to the uncouth *Arundarbor*; *Protea* is dropped in favour of the sesquipedalian *Scolymocephalus*; the familiar *Zamia* becomes *Palmifolia*; and so on for scores of others.

Dr. Kuntze's appetite for change was by no means surfeited by many hundreds of alterations of a similar character to those just quoted. During his examination of certain obscure publications of old date he unearthed quite a number of generic terms which, though of prior date to others, had been ruled out of court by previous botanists because they violated the well-known law that botanical names should not be taken from barbarous tongues, or be unnecessarily long or difficult to pronounce. Thus, for instance, he takes the name of *Mokuf* from Adanson's "Familles," latinizes it by changing it to *Mokufua*, and then uses it to supersede the long-established *Ternstroemia*. The still more hideous name of *Katoutsjeroc* he alters to *Catutsjeron*, and substitutes it for *Holigarna*. Finally, as a crowning instance of misdirected ingenuity, he brings forward the name *Jryaghedi*, which I fail to pronounce at all, and uses it for both the generic and specific name of a species of *Myristica*, which accordingly becomes *Jryaghedi Jryaghedi*!

One result of the wholesale shifting of names brought about by Dr. Kuntze is that well-known genera are sometimes left without a name at all. He then renames them, often dedicating them, in an original and amusing manner, to some of the leading botanists of his time. For instance, having decided, as previously mentioned, that the oldest name of the Australian and New Zealand genus *Pimelea* is *Banksia*, and finding that this change leaves the genus we have been accustomed to call

Banksia without a name, he resolves to provide it with one which will commemorate the late Baron Mueller's services to Australian botany. He cannot do this in the usual manner, as there is already a genus *Muelleria*; but he gets over the difficulty by coining the new generic term *Sirmuelleria*! In a similar way, Sir J. D. Hooker's connection with Indian botany is to be recognised by applying the name *Sirhookera* to a genus of orchids. Perhaps a more remarkable degree of ingenuity is shown by the invention of a whole series of names such as *Watsonamra*, *Kinginda*, *Ernstafra*, *Itoasia*, &c., all coined in honour of workers in botanical science. The addition "*amra*" implies that the prefixed author was mostly concerned with American botany; "*inda*" that his chief work was connected with India; "*afra*" with Africa; "*asia*" with the Continent of Asia; and so on.

It is difficult in a short sketch like the above to give a proper idea of the revolutionary changes proposed by Dr. Kuntze, and of the disturbing effect which their publication produced in the botanical world. It is true that, with the exception of a number of American botanists, some of whom have shown a disposition to go to greater lengths than Kuntze himself, hardly any workers in botanical science have accepted the conclusions arrived at in the "*Revisio*," and that very few of the generic or specific names proposed therein have passed into general use. At the same time, it is an undeniable fact that if the law of priority is to be rigidly enforced, then many of Kuntze's changes must be accepted, to the great detriment of botanical science. Under such circumstances, it is not surprising that a widespread feeling arose in favour of an agreement amongst botanists generally under which stability of nomenclature could be secured without revolutionary changes of such a sweeping character as to make the botanical literature of the past almost unintelligible to the workers of the future. The first practical step in this direction was taken in 1892, when a number of German botanists, under the leadership of Professor Engler, issued an important memorandum, recommending that the date of the publication of the "*Species Plantarum*" (1753) should be taken as the starting-point of botanical nomenclature, and suggesting a list of generic names to be retained which, under the strict application of the law of priority, must otherwise be changed. Later in the same year, at a congress held at Genoa, a commission of thirty members was appointed to consider the question in all its bearings. The report of this commission, framed by Drs. Ascherson and Engler, did not appear until the commencement of 1895. It suggested the date of 1753 as a starting-point for both genera

and species, provided that when transferring a species from its original genus to another the original specific name should be retained; and finally recommended that a name which had been lost sight of or neglected for fifty years should not be allowed to displace the corresponding one which had remained in common use. Following up this report, the Berlin botanists issued a series of rules embodying its principles, and suggesting a number of minor points for adoption. In the meantime recommendations or suggestions were freely made by individual botanists or groups of botanists in all parts of the world, and in 1900 a preliminary Congress met at Paris. At the outset, it was decided that its work, so far as botanical nomenclature was concerned, should be confined to providing the machinery under which the subject should be prepared for discussion at a fully representative Congress to be held at Vienna in 1905. A commission on nomenclature was therefore set up, of which Dr. Briquet, of Geneva, was appointed Rapporteur Général. It was understood that the duty of the commission was to provide recommendations for the amendment or modification of the laws of nomenclature drawn up in 1867 by Alphonse de Candolle. Mainly through the great activity and praiseworthy industry of Dr. Briquet the commission succeeded in preparing a "Texte Synoptique," in which were collated and compared the numerous suggestions made by botanists during recent years for the amendment of the Candollean laws. The suggestions were referred seriatim to the members of the commission, and were voted upon by the members, after which recommendations were tabulated according to the results of the voting.

The International Botanical Congress of Vienna, as it is officially styled, sat from the 11th to the 18th June, 1905, and was in every way a most successful and impressive gathering. Nearly five hundred botanists, representing most of the countries and nearly all the important botanical institutions in the world, attended the meeting. Among those present were several of those who may be styled the leaders of botanical science, and a majority of the names would be familiar to any one acquainted with recent botanical literature. The Congress can therefore be regarded as a thoroughly representative body, possessing a full claim to have its decisions respected by the great mass of working botanists. Passing over that portion of the work of the Congress not directly concerned with the subject of this paper, it is perhaps advisable to say that the plan adopted for the consideration of botanical nomenclature was as follows: Every afternoon the nomenclature conference, consisting of about a hundred and fifty representatives, with Professor

Flahault, of Montpellier, as president, Drs. Rendle and Mez as vice-presidents, and Dr. Briquet as rapporteur, met and worked steadily through the "*Texte Synoptique*," already alluded to. Much discussion arose on several debatable points, especially on the question as to the specific name to be adopted when a species is transferred from one genus to another, the result, as will be shown further on, being in favour of those who adopt the earliest epithet bestowed upon the species. But both in this and in other instances, although the points at issue were very fully and freely discussed, there was a total absence of all feeling, and an evident wish to arrive at a practical solution which would be acceptable to the majority of botanists. Quite four hours' work each afternoon for a whole week were found not at all too much for the proper consideration of the many intricate questions involved, and for the codification of the recommendations as finally agreed upon.

The main decisions of the Congress were promptly reported in botanical and other scientific journals, but the official report did not appear for considerably more than a year. It consists of a quarto publication of 100 pages, bearing the title (in French, English, and German) of "*International Rules of Botanical Nomenclature, adopted by the International Botanical Congress of Vienna, 1905.*" The first sixteen pages are occupied by the preface, and a valuable "*concordance*" of the Candollean laws of 1867 with those now adopted. Pages 17 to 71 contain the text of the rules, or "*articles*" as they are called, given separately in French, English, and German. Pages 72 to 93 are taken up with a list of 408 "*Nomina Conservanda*" or generic names which are in any case to be retained, chiefly on account of long-established usage, although on the strict application of the law of priority they should be rejected. Finally, there is a useful "*Index Analytique*." But this report is only an extract from a larger publication entitled "*Actes de Congrès International de Botanique tenu à Vienne (Autriche) en 1905,*" which contains a full report of the debates and proceedings of the Congress, showing clearly the steps which led to the adoption of the rules.

It is not my intention to give the rules in full—every botanist should possess a copy of his own; and as they have been reprinted in pamphlet form by the proprietors of the "*Journal of Botany*," and can be obtained for the low price of 1s., no one need be without them. I propose, however, to make a few comments upon those which are of special interest to New Zealand botanists.

At the outset, it should be mentioned that the word "*laws*" originally adopted by Alphonse de Candolle in 1867 is changed

in favour of "rules" and "recommendations." The difference between a rule and a recommendation is explained by Article 2, which states that the rules are "destined to put in order the nomenclature which the past has bequeathed to us, and to form the basis for the future." Recommendations "bear on secondary points, their object being to insure for the future a greater uniformity and clearness in nomenclature." Taken collectively the rules are divided into three chapters, containing 58 rules, or articles, as they are headed, and 37 recommendations. "The rules are retroactive; names or forms of nomenclature which are contrary to a rule cannot be maintained." "Names or forms of nomenclature contrary to a recommendation are not a model to copy, but cannot be rejected."

Article 9.—Under this rule it is provided that the nomenclature of cellular cryptogams and fossil plants shall be considered at the next International Congress, to be held at Brussels in 1910. To this Congress is also to be presented a proposed list of "Nomina Conservanda" for all divisions of plants other than phanerogams.

Articles 10–14.—These define the nature and subordination of the groups constituting the vegetable kingdom. It will be noticed that the word "order," which in the past has been commonly applied to groups such as *Ranunculaceæ*, is now used to designate those divisions of higher rank previously known as "cohorts," the word "family" taking its place. In future it will be necessary to speak of "the family *Ranunculaceæ*," "the family *Cruciferae*," &c.

Article 15 provides that each group of plants, of whatsoever rank, can bear only one valid name, which must be the oldest, provided that it is in conformity with other rules.

Article 17.—"No one should change a name or a combination of names without serious motives, based on a more profound knowledge of facts, or on the necessity of giving up a nomenclature that is contrary to rules." It is to be hoped that the spirit of this rule will be acted upon in the future.

Article 19.—Under this rule it is definitely arranged that botanical nomenclature shall commence with the publication of the first edition of the "Species Plantarum" of Linnæus in 1753. The advantages of a fixed starting-point are undeniable, and the adoption of this rule alone marks a considerable advance in the direction of stability of nomenclature.

Article 20.—This important rule had better be quoted *in extenso*: "However, to avoid disadvantageous changes in the nomenclature of genera by the strict application of the rules of nomenclature, and especially of the principle of priority in

starting from 1753, the rules provide a list of names which must be retained in all cases. These names are by preference those which have come into general use in the fifty years following their publication, or which have been used in monographs and important floristic (*floristiques*) works up to the year 1890. The list of these names forms an appendix to the rules of nomenclature."

I regard Rules 19 and 20 as the most important passed by the Congress, inasmuch as they will sweep out of existence many of the forgotten and useless names revived by Kuntze and similar writers. The list contains the names of 408 genera, containing many thousands of species. It is no light service to botanical nomenclature to preserve these names unaltered, and to obviate the worse than useless confusion which would have been caused by their change. I only regret that the list has not been made more extensive. For instance, *Nasturtium* might well have been included, seeing that some botanists propose to supplant it by the older but almost unknown name of *Radicula*. However, taking the list as it stands, New Zealand botanists will be glad to know that it preserves from alteration the names of thirty-one genera of New Zealand plants and of seventy-five species. We shall not be compelled to call *Astelia* by the name of *Funckia*, or to change *Cordyline* to *Terminalis*, or *Luzula* to *Juncodes*, &c. No doubt the setting-up of a list of plants not subject to the law of priority is an arbitrary measure; but then desperate diseases require vigorous remedies, and there is practically no other plan of preventing an entirely disproportionate or even overwhelming amount of change in botanical nomenclature.

Articles 24 and 25, dealing with the names of genera, are well worth attention. Clause (d) of Recommendation 4, subjoined to the rule, provides that generic names may be accompanied by a prefix or suffix, or may be modified by anagram or abbreviation, and in such cases count as different words. I mention this because the late Dr. Kuntze contended that all such names should be treated as synonyms, and only the oldest retained. Under the above recommendation both *Durvillea* and *Urvillea*, *Chloris* and *Chlorœa*, *Glaux* and *Glaucium*, are valid, and will be allowed to stand.

Article 26.—Recommendation 10: This is to the effect that specific names begin with a small letter, except in the case of those taken from the names of persons, or from generic names, as *Phyteuma Halleri*, *Lythrum Hyssopifolia*. My reason for drawing attention to this is that all previous editors of the "Transactions of the New Zealand Institute" have insisted on treating botanical names in the same manner as zoological,

where the practice is to use a small letter for *all* specific names. But the custom of botanists has always been different (see No. 34 of the Candollean laws). Now that the Congress of 1905 has reaffirmed the principle, it is to be hoped that botanists may be allowed to have their specific names printed in their own fashion.

The clauses of Recommendation 14, dealing with the formation of specific names, should have the attentive study of all botanists who have anything to do with the naming of plants.

Article 35, treating of the publication of new names, states, "Publication is effected by the sale or public distribution of printed matter or indelible autographs. Communication of new names at a public meeting, or the placing of names in collections or gardens open to the public, do not constitute publication." The words "public distribution of printed matter or indelible autographs" are a little vague. If it is meant that any person whatever may share, if he wishes, in the "public distribution," then no objection can be taken; but great objections exist to the publication of new species by the distribution of printed or autographic matter among a few friends. Nowadays there are so many regular publications in which descriptions of new species can appear that it would have been better to have limited publication to the sale of printed matter alone.

Article 36.—"On and after January 1st, 1908, the publication of names of new groups will be valid only when they are accompanied by a Latin diagnosis." This I regard as a great mistake. It is understood that the proposition originally submitted to the Congress was to the effect that the publication of names of new species, &c., must be accompanied by a description either in Latin, English, French, German, or Italian. This was strongly opposed by the Russian and Scandinavian members, and the limitation of the diagnosis to the Latin language was apparently taken as the only practicable solution of the difficulty. The voting on the question was very close—105 for the proposal, and 88 against. The most serious objection to the rule is that it tends to confine the publication of new species to a few professional botanists, and will thus narrow the interest taken in systematic botany as a whole.

Article 49.—Under this rule it is agreed that when a species is transferred from one genus to another the first specific epithet must be retained or re-established. This must be taken as one of the most important and far-reaching decisions of the Congress, asserting, as it does, the inviolable nature of the first specific name, no matter in what genus it may have been placed.

In another part of this paper I have mentioned the chief reasons which have induced almost all English botanists, up to the present time, to support the view that not the earliest specific epithet but the earliest name in the correct genus should receive the acceptance of botanists. While regretting the decision of the Congress, I am prepared to admit that, in the interests of botanical science, it is necessary that the rules should be generally accepted and implicitly followed. I therefore trust that finality has been reached on this question, and that all working botanists will adopt the new rule.

Article 50.—"No one is authorised to reject, change, or modify a name (or combination of names) because it is badly chosen, or disagreeable, or another is preferable or better known, or because of the existence of an earlier homonym which is universally regarded as non-valid, or for any other motive either contestable or of little import." This is a valuable rule, inasmuch as it prevents any alteration or tampering with valid names. A name once given must be preserved in its original shape. The only change which can be made is that provided for by Article 57, which permits the correction of a typographic or orthographic error. Even this, as stated in Recommendation 30, "must be used with reserve, especially if the change affects the first syllable, and, above all, the first letter of a name." The rule also disposes of the contention that a name once lapsed into synonymy is always a synonym, and cannot again be employed.

Articles 51-54.—These rules, which should be carefully studied, specify the circumstances under which it is necessary or allowable to reject, change, or modify names, whether ordinal, generic, or specific. They have been carefully framed, and appear to be fair and equitable. The chief reasons are specified in Article 51, which I quote herewith: "Every one should refuse to admit a name in the following cases: (1) When the name is applied in the plant kingdom to a group which has an earlier valid name; (2) when it duplicates the name of a class, order, family, or genus, or a subdivision or species of the same genus, or a subdivision of the same species; (3) when it is based on a monstrosity; (4) when the group which it designates embraces elements altogether incoherent, or when it becomes a permanent source of confusion or error."

Article 55.—The important part of this rule is the second clause, providing that specific names must be rejected when they simply repeat the generic name. This rule will effectually put an end to such combinations as *Linaria Linaria*, *Abutilon Abutilon*, *Petroselinum Petroselinum*, &c., which have, through the craze for priority at any cost, come into partial use during

the last ten years, particularly among a section of American botanists.

Recommendations 34 and 35, placed with some others in the appendix, suggest that the metric system only should be used in botany for reckoning weights and measures, &c. I am certainly of opinion that all measurements given in the Latin diagnosis, which is now imperative when a new species is described, should conform to this rule; and it might also be reasonably adopted in memoirs or communications prepared mainly for the use of professional botanists. But it is open to discussion whether the metric system should displace the system of measurement adopted in any country in the case of floras or other works written in the vernacular of that country, and intended for general use. After all, the convenience of the majority is the point to be considered.

In the above remarks on the results of the Vienna Congress I have, for the sake of brevity, passed over several rules which are of considerable interest and value to the working botanist. My principal object has been to draw attention to those rules which, if they are adopted and acted upon by botanists generally, may be expected to relieve the intolerable state of uncertainty into which botanical nomenclature has drifted during the last twenty-five years. The work of the Congress, as a whole, gives evidence of steady progress towards a stable nomenclature, and it is in every way desirable that the rules should have a fair trial. They have been fully and carefully discussed by a body specially summoned for the purpose, and are framed in moderate and reasonable terms. I think it can be said that they constitute a sincere and honest attempt to settle the many differences of opinion which of late years have wasted and divided the energies of systematic botanists, so far as matters of nomenclature are concerned. No doubt, to arrive at a permanent settlement will demand much forbearance, and necessitate the subordination of individual inclinations to the decision of the majority; but, on the other hand, the advantages to be gained from the establishment of a stable system of nomenclature are incalculable.

It may be asked what changes in the nomenclature of New Zealand plants will be caused by the new rules. To this I would reply that they are comparatively few. So far as the genera are concerned, the list of "Nomina Conservanda" appended to the rules shuts out most of the alterations proposed by Dr. Kuntze and his followers. With respect to the species, the majority of the changes will be due to the adoption of the rule that in all cases the earliest specific epithet must be maintained. Names like *Haloragis alata* and *Ipomœa biloba*,

although the oldest in the correct genus, must give place to *Haloragis erecta* and *Ipomœa pes-capræ*, as the oldest in any genus. In a similar manner, the affirmation of the principle that no one can reject a name because of the existence of an earlier homonym which is universally regarded as non-valid will cause a few alterations. For instance, Mr. Kirk's name of *Lepidium flexicaule*, given under the supposition that Hooker's *Lepidium incisum* was invalidated by the earlier *Lepidium incisum* of Roth, must be abandoned, and Hooker's name restored, Roth's name being now generally admitted to be non-valid. I propose to draw up a complete list of the alterations rendered necessary, but the work is not one to be hurriedly prepared or hastily published. Those who are so eager to promulgate new names that they do not take the trouble to consider them in all their bearings will probably find that later on they will have to supersede the very names they have themselves proposed. One source of trouble and delay is the necessity of referring to European libraries for the verification of the dates of publication of those species described in works not available in the Dominion. Experience has proved that it is not always safe to trust to the quotations of dates, &c., given in floras or even in general works on botany. With the view of showing the character of the changes that will have to be made, I give as an addendum to this paper a list of those necessary in the ferns—a family in which the proportion of new names will be larger than in most others. It will, of course, be understood that I am dealing only with the changes rendered necessary by the adoption of the international rules.

ADDENDUM.

Changes in the Nomenclature of the New Zealand Ferns caused by the International Rules of Botanical Nomenclature adopted at the Botanical Congress of Vienna.

1. *Hymenophyllum subtilissimum*, Kuntze, Anal. Pteridog., 49 (1837). Oldest name, and the one to be adopted, *Hymenophyllum ferrugineum*, Colla, Mem. Acad. Torino, 39 (1836).
2. *Hymenophyllum unilaterale*, Willd., Sp. Plant., v, 521 (1810). Oldest name, *Trichomanes peltatum*, Poir., Encycl., viii, 76 (1808); name to be adopted, *Hymenophyllum peltatum*, Desv., Prodr., 333 (1827).
3. *Lindsaya trichomanioides*, Dryand. in Trans. Linn. Soc., iii, 43 (1797). Oldest name, *Adiantum cuneatum*, Forst., Prodr., n. 461 (1786); name to be adopted, *Lindsaya cuneata*, C. Chr., Index Fil., 392 (1906).

4. *Lomaria alpina*, Spreng., Syst. Veg., iv, 62 (1827). Oldest name, *Polypodium penna-marina*, Poir., Encycl., v, 535 (1804); name to be adopted, *Lomaria penna-marina*, Trev., Atti. Inst. Veneto, 14, 570 (1869).
5. *Asplenium falcatum*, Lam., Encycl., ii, 306 (1786). Oldest name, *Trichomanes adiantoides*, Linn., Sp. Plant., ii, 1098 (1753); name to be adopted, *Asplenium adiantoides*, C. Chr., Index Fil., 99 (1905).
6. *Aspidium capense*, Willd., Sp. Plant., v, 267 (1810). Oldest name, *Polypodium adiantiforme*, Forst., Prodr., n. 449 (1786); name to be adopted, *Aspidium adiantiforme*.
7. *Nephrodium unitum*, R. Br., Prodr., 148 (1810). Oldest name, *Aspidium gongylodes*, Schk., Krypt. Gew., 1809; name to be adopted, *Nephrodium gongylodes*, Schott, Gen. Fil. ad t. 10 (1834).
8. *Nephrodium molle*, R. Br., Prodr., 149 (1810). Oldest name, *Polypodium parasiticum*, Linn., Sp. Plant., ii, 1090 (1753); name to be adopted, *Nephrodium parasiticum*, Desv., Prodr., 260 (1827).
9. *Polypodium Cunninghamii*, Hook., Gard. Ferns ad t. 30 (1862); Sp. Fil., v, 58 (1864). Oldest name and name to be adopted, *Polypodium dictyopteris*, Mett., Ann. Sci. Nat., 15, 72 (1861).
10. *Gleichenia dichotoma*, Hook., Sp. Fil., i, 12 (1844). Oldest name, *Polypodium lineare*, Burm., Fl. Ind., 235 (1768); name to be adopted, *Gleichenia linearis*, C. B. Clarke in Trans. Linn. Soc., ii, Bot., i, 428 (1880).

In addition to the above, alterations affecting the names of *Polypodium australe* and *P. Billardieri* are held over for fuller inquiry.



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