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CONTENTS OF VOLUME XLVIII.

NUMBER CXLII.

Page.

ART. I.—Charles Grafton Page, ---------- 1

II.—On Hortonolite, a new member of the Chrysolite group; by GEORGE J. BRUSH, with measurements and observations on the crystalline form of the mineral, by JOHN M. BLAKE, ---------- 17

III.—Notes on some points in the Structure and Habits of the Paleozoic Crinoidea; by F. B. MEEK and A. H. WORTHEN, ---------- 23

IV.—On the effect of Atmospheric Air when mixed with Gas in reducing its illuminating power; by B. SILLIMAN, and HENRY WURTZ, ---------- 40

V.—Description of a new Species of Protichnites from the Potsdam Sandstone of New York; by O. C. MARSH. (With a Plate.) ---------- 46

VI.—Notices of papers in Physiological Chemistry—No. II; by GEORGE F. BARKER, ---------- 49

VI.—Aurora at Toronto, Canada; by G. T. KINGSTON, ---- 65

VII.—A Qualitative Separation of Cobalt and Nickel; by FRANK WIGGLESWORTH CLARKE, ---------- 67

VIII.—Notes on the structure of the Crinoidea, Cystidea and Blastoidea; by E. BILLINGS, ---------- 69

IX.—Spectroscopic examination of the Diatomaceæ; by H. L. SMITH, ---------- 83

X.—Note on Wollongongite, a remarkable hydro-carbon found in the Wollongong District of the Illawarra Coal Field, N. S. Wales; by B. SILLIMAN, ---------- 85

XI.—The Rules of Zoological Nomenclature; with notes by A. E. VERRILL, ---------- 92

XII.—Contributions from the Sheffield Laboratory of Yale College.—No. XIX. On the estimation of Carbonic Acid; by S. W. JOHNSON, ---------- 111

Page.

XIII.—On the Aurora seen in New York, April 15, 1869; by W. S. GILMAN, Jr., ---------- 114

XIV.—Contributions to Zoölogy from the Museum of Yale College. No. I.—Descriptions of a remarkable new Jelly-fish and two Actinians from the coast of Maine; by A. E. VERRILL, ---------- 116

SCIENTIFIC INTELLIGENCE.

Physics and Chemistry.—Spectroscopic observations of the Sun, LOCKYER, 121.—On the existence of a stratum giving a continuous spectrum between the chromosphere and the sun's limb: On a new alkaloid isomeric with toluidine, 123.

Mineralogy and Geology.—Extracts from "Report on the Precious Metals," by W. P. BLAKE, 126.—Notes on the origln of Bitumens, together with experiments upon the formation of Asphaltum, S. F. PECKHAM, 131.—Paleontology of the Geological Survey of California, J. D. WHITNEY, 133.—Reliquiæ Aquitanicæ, LARTET and CHRISTY, 135.—Report on the Mineral Resources of the States and Territories west of the Rocky Mountains, by ROSSITER W. RAYMOND, 136.—On a transparent Wolfram, DESCLOIZEAUX: On the Descloizite of the Wheatly mine, Pennsylvania, by J. LAWRENCE SMITH, 137.—Geological Survey of Indiana: On a new locality of Franklinite, by WM. A. FONDA: Révue de Géologie pour les années, 1866 et 1867, par M. DELESSE: Etudes sur le Métamorphisme des Roches, par DELESSE: I. Réapparition der genre *Arethusina* Barr.; II. Faune Silurienne des environs de Hof, en Baviére, par JOACHIM BARRANDE, 138.

Zoology.—On some of the more recent works upon Annulata, 139.—Mémoires pour servir à la Connaissance des Crinoïdes Vivants, par MICHAEL SARS, 142.—Contributions to the Natural History of the Bermudas, Coralliaria, by J. MATTHEW JONES: Occasional Papers of the Boston Society of Natural History, Vol. I, Entomological Correspondence of Thaddeus William Harris, SAMUEL H. SCUDDER, 143.—The Butterflies of North America, with colored Drawings and Descriptions, by WM. H. EDWARDS: American Cervus, by JOHN D. CATON: Observations on the Genus Unio, together with descriptions of new species in the family Unionidæ, and descriptions of new species of Melanidæ and Paludinæ, by ISAAC LEA, 144.

Miscellaneous Scientific Intelligence.—Remarkable Meteor of May 20th, by Prof. E. LOOMIS, 145.—Meteor of May 20th: Aurora Borealis of the evening of April 15th: American Association for the Advancement of Science, 146.—List of papers read before the National Academy of Sciences at its April Session, 1869, 147.

Miscellaneous Bibliography.—The Yosemite Guide Book, 148.—Investigations in the Military and Anthropological Statistics of American Soldiers, by BENJAMIN APTHORP GOULD, 149.—Modern Practice of the Electric Telegraph, a Handbook for Electricians and Operators, by FRANK L. POPE: The Mississippi Valley; its Physical Geography, including sketches of the Topography, Botany, Climate, Geology, and Mineral resources; and of the progress of development in population and material wealth, by J. W. FOSTER: The origin of the Seasons considered from a Geological point of view, by SAMUEL MOSSMAN, 150.—Lecture Notes on Physics, by ALFRED M. MAYER: Strength of Iron parts of Steam Machinery, by by J. D. VAN BUREN: Publications of the Geological Survey of California, 151.

Proceedings of Societies, etc., 152.

under the influence of this process the extremely dense and rich gas which the ordinary process returns from this coal is broken up into a much larger volume of gas of a less density and lower illuminating power. Wollongongite has therefore the power to raise the illuminating intensity of gas from common caking coals when treated by the hydro-carbon process, even when so small a quantity as five per cent is employed, much above the average of illuminating gas in common use; while at the same time the volume of the gas produced exceeds 16,400 cubic feet per ton against about 10,000 cubic feet by the common process, of a much lower illuminating power.

ART. XI.—*The Rules of Zoological Nomenclature. From the Report of a Committee "appointed to report on the changes which they may consider desirable to make, if any, in the Rules of Zoloogical Nomenclature*, drawn up by Mr. H. E. STRICKLAND, at the instance of the British Association, at their meeting in Manchester in 1842." With notes by A. E. VERRILL.

THAT the value and utility of the binomial system of nomenclature, established by Linné and at once adopted by nearly all scientific zoölogists and botanists, depends directly upon the uniformity and universality of the rules regulating its application is so evident as to require no demonstration; yet very many writers, both in this country and abroad, constantly ignore, either ignorantly or carelessly, if not wilfully, many of the most essential laws proposed by the author of the system, and confirmed and made sacred by the usage of the best naturalists of the past century. The advance of zoölogical and botanical sciences has, it is true, made necessary certain restrictions to and extensions of the rules established by Linnæus, but later codes of laws regulating this matter are based upon and, in all the principal points, are essentially identical with those originally proposed.*

To secure greater uniformity and bring about certain reforms in this matter, the British Association in 1842 appointed a committee, consisting of Mr. C. Darwin, Professor Henslow, Rev. L. Jenyns, Mr. W. Ogilby, Mr. J. Phillips, Dr. Richardson,

* An excellent exposition of the Linnæan canons, as elaborated in the Philosophia Botanica, has been given by Prof. Agassiz in the preface to his Nomenclator Zoologicus, 1846, together with a review of those of the British Association. See also A. Gray's review of the work, this Journal, 2d Series, vol. iii, p. 302, 1847.—V.

Mr. H. C. Strickland, Mr. J. O. Westwood, to draw up and report a code of rules "by which the nomenclature of zoölogy may be established on a uniform and permanent basis." To this committee were afterward added W. J. Broderip, Professor Owen, W. E. Shuckard, G. R. Waterhouse and W. Yarrel. This committee in 1842 submitted to the Association a "series of propositions," which were adopted and printed in the Report for that year.* They were also published separately for private distribution.

A committee was afterward appointed by the Association of American Geologists and Naturalists to consider this subject. The committee reported at the sixth meeting, 1845, in favor of adopting the British Association's Rules, with slight modifications, the principal objection being to the writing of proper names of species without an initial capital, a change since introduced also by the British Association. The report was accepted and the amended rules adopted.† Although the reformatory influence of these rules, thus brought so prominently to the notice of zoölogists, has doubtless been very great, yet their success was but partial, even in England, for a considerable number of English authors have either ignored them or adopted them only in part, often violating the most obvious and important rules. In the department of conchology, especially, the violations of such laws have been lamentably numerous and disastrous. This result may, perhaps, have been due in part to a few propositions, which, though of but secondary importance, were regarded as objectionable, in practice, by some of the best writers, and have now been modified. In 1863, a new committee of sixteen was appointed by the British Association to consider the "changes, *if any*, which they may consider it desirable to make in the Rules." At the Birmingham meeting in 1865, a Report was submitted and adopted by the Association,‡ recommending the following:—

I. That Botany should not be introduced into the Strickland rules and recommendations.

II. That the permanency of names and convenience of practical application being the two chief requisites in any code of rules for scientific nomenclature, it is not advisable to disturb

* Report of the twelfth meeting, 1842, p. 106,—also reprinted in Annals of Natural History; Philosophical Magazine; translated into French, in the Journal of 'L'Institut'; and translated into Italian and approved by the Scientific Congress at Padua, in 1843. See also reviews in this Journal, vol. xlv, p. 1, 1842; and 2d series, vol. iii, p. 302, 1847.

† These amended rules were printed in this Journal, 2d series, vol. ii, p. 423, 1846.

‡ Report of the British Association for the Advancement of Science, Birmingham, 1865, p. 28.

by any material alterations the rules of zoological nomenclature which were authorized by Section D at the Meeting of the British Association at Manchester in 1842.

III. The Committee are of opinion, after much deliberation, that the XIIth edition of the 'Systema Naturæ' is that to which the limit of time should apply, viz., 1766. But as the works of Artedi and Scopoli have already been extensively used by ichthyologists and entomologists, it is recommended that the names contained in or used from these authors should not be affected by this provision. This is particularly requisite as regards the generic names of Artedi, afterward used by Linnæus himself.*

In Mr. H. E. Strickland's original draft of these Rules and Recommendations the edition of Linnæus was left blank, and the XIIth was inserted by the Manchester Committee. This was done not as being the first in which the Binomial nomenclature had been used, as it commenced with the Xth, but as being the last and most complete edition of Linné's works, and containing many species the Xth did not. For these reasons it is now confirmed by this Committee, and also because these rules having been used and acted upon for twenty-three years, if the date were altered now, many changes of names would be required, and in consequence much confusion introduced.

IV. In Rule 13th, "*Specific names, when adopted as generic, must be changed.*" The committee agree that it is exceedingly injudicious to adopt a specific name as a generic name, but they are of opinion that where this has been done, it is the *generic name* which must be thrown aside, not the old specific name, and that this rule should be so altered as to meet this.

V. The recommendations under "*Classes of objectionable names,*" as already pointed out, cannot be too carefully attended to. *Specific names* from persons have already been sufficiently prostituted, and personal *generic* names have increased to a large and undeserving extent. The handing down the name of a naturalist by a genus has always been considered as the highest honor that could be given, and should never be bestowed lightly.

* If the XIIth edition is to be adopted as the limit of priority, it will be necessary to make additional exceptions. Thus the excellent and important work of Pallas, *Elenchus Zoophytorum*, was published nearly two years before the last volume of the Systema Naturæ, ed. XII, and contains a much greater number of species than were included in the latter work, while the descriptions of genera and species are far superior and the system purely binomial. To reject the earlier names of Pallas would be doing gross injustice to an able naturalist, who was among the first to adopt the binomial system after its appearance in the Xth edition. The more logical and just course would be to limit the law of priority to the Xth edition, thus applying the law to its author. This course is also sanctioned by the usage of many of the best zoölogical writers. But in several other departments of zoölogy it will make no difference whether the Xth or XIIth edition be regarded as the limit.—v.

VI. The recommendation, "*Specific names to be written with a small initial.*" The Committee propose that this recommendation should be omitted. It is not of great importance, and may be safely left to naturalists to deal with as they think fit.

These are the chief alterations and modifications the Committee have to suggest. It is scarcely possible to make any code of rules for a subject so extensive as zoölogy either perfect in itself or such as will meet the opinions of every one. It must be a matter of compromise, and as working by *no rules* is creating great confusion and an immense increase in synonymy, the Committee would ask this Section to approve their present report or finding, and to give their sanction to these Rules and Recommendations as now proposed to be modified.

Signed on the part of the members of Committee present at Birmingham* by WM. JARDINE, *Reporter.*

On the preceding Report being read to Section D, upon Tuesday, 19th September, the following motion was made and carried unanimously:—

Moved by Mr. Gwyn Jeffreys, seconded by Dr. Sclater,—*That the Report now read be approved of and adopted by the Section, and that the Rules or propositions, as thereby altered and amended, be printed in the Reports of the British Association and recommended for the general use of zoologists.*

PART I.

RULES FOR RECTIFYING THE PRESENT ZOOLOGICAL NOMENCLATURE.

[*Limitation of the Plan to Systematic Nomenclature.*]—In proposing a measure for the establishment of a permanent and universal zoölogical nomenclature, it must be premised that we refer solely to the Latin or systematic language of zoölogy. We have nothing to do with vernacular appellations. One great cause of the neglect and corruption which prevails in the scientific nomenclature of zoölogy, has been the frequent and often exclusive use of vernacular names in lieu of the Latin binomial designations, which form the only legitimate language of systematic zoölogy. Let us then endeavor to render perfect the Latin or Linnæan method of nomenclature, which, being far removed from the scope of national vanities and modern antipathies, holds out the only hope of introducing into zoölogy that grand desideratum, an universal language.

[*Law of Priority the only effectual and just one.*]—It being admitted on all hands that words are only the conventional signs of ideas, it is evident that language can only attain its end effectually by being permanently established and generally recognized. This consideration ought, it would seem, to have checked those who are continually attempting to subvert the established lan-

* The members of the Committee present at Birmingham were A. R. Wallace, Professor Babington, Dr. Francis, Dr. Sclater, C. Spence Bate, P. P. Carpenter, Professor Balfour, H. T. Stainton, J. Gwyn Jeffreys, A. Newton, G. Bentham, and Sir W. Jardine, Bart. (Reporter).

guage of zoölogy by substituting terms of their own coinage. But forgetting the true nature of language, they persist in confounding the *name* of a species or group with its *definition*; and because the former often falls short of the fulness of expression found in the latter, they cancel it without hesitation, and introduce some new term which appears to them more characteristic, but which is utterly unknown to the science and is therefore devoid of all authority.* If these persons were to object to such names of men as *Long*, *Little*, *Armstrong*, *Golightly*, &c., in cases where they fail to apply to the individuals who bear them, or should complain of the names *Gough*, *Lawrence* or *Harvey*, that they were devoid of meaning, and should hence propose to change them for more characteristic appellations, they would not act more unphilosophically or inconsiderately than they do in the case before us; for, in truth, it matters not in the least by what conventional sound we agree to designate an individual object, provided the sign to be employed be stamped with such an authority as will suffice to make it pass current. Now in zoölogy no one person can subsequently claim an authority equal to that possessed by the person who is the first to define a new genus or describe a new species; and hence it is that the name originally given, even though it may be inferior in point of elegance or expressiveness to those subsequently proposed, ought as a general principle to be permanently retained. To this consideration we ought to add the injustice of erasing the name originally selected by the person to whose labors we owe our first knowledge of the object; and we should reflect how much the permission of such a practice opens a door to obscure pretenders for dragging themselves into notice at the expense of original observers. Neither can an author be permitted to alter a name which he himself has once published, except in accordance with fixed and equitable laws. It is well observed by Decandolle, "L'auteur même qui a le premier établi un nom n'a pas plus qu'un autre le droit de le changer pour simple cause d'impropriété. La priorité en effet est un terme fixe, positif, qui n'admet rien, ni d'arbitraire ni de partial."

For these reasons, we have no hesitation in adopting as our fundamental maxim, the "law of priority," viz:

§ 1. The name originally given by the founder of a group or the describer of a species should be permanently retained, to the exclusion of all subsequent synonyms (with the exceptions about to be noticed).

Having laid down this principle, we must next inquire into the limitations which are found necessary in carrying it into practice:

[*Not to extend to authors older than Linnæus.*]—As our subject matter is strictly confined to the *binomial system of nomenclature*, or that which indicates species by means of two Latin words, the one generic, the other specific, and as this invaluable method originated solely with Linnæus, it is clear that, as far as species are concerned, we ought not to attempt to carry back the principle of priority beyond the date of the 12th edition of the 'Systema Naturæ,' 1766. Previous to that period, naturalists were wont to indicate species not by a *name* comprised in one word, but by a *definition* which occupied a sentence, the extreme verbosity of which method was productive of great inconvenience. It is true that one word sometimes sufficed for the definition of a species, but these rare cases were only binomial by accident and not by principle, and ought not therefore in any instance to supersede the binomial designations imposed by Linnæus.

* Linnæus says on this subject, "Abstinendum ab hac innovatione quæ nunquam cessaret, quin indies aptiora detegerentur ad infinitum."

The same reasons apply also to generic names. Linnæus was the first to attach a definite value to genera, and to give them a systematic character by means of exact definitions; and therefore, although the *names* used by previous authors may often be applied with propriety to modern genera, yet in such cases they acquire a new meaning and should be quoted on the authority of the first person who used them in this secondary sense. It is true that several of the old authors made occasional approaches to the Linnæan exactness of generic definition, but still these were but partial attempts; and it is certain that if in our rectification of the binomial nomenclature we once trace back our authorities into the obscurity which preceded the epoch of its foundation, we shall find no resting-place or fixed boundary for our researches. The nomenclature of Ray is chiefly derived from that of Gesner and Aldrovandus, and from these authors we might proceed backward to Ælian, Pliny, and Aristotle, till our zoölogical studies would be frittered away amid the refinements of classical learning.*

We therefore recommend the adoption of the following proposition:—

§ 2. The binomial nomenclature having originated with Linnæus, the law of priority in respect of that nomenclature, is not to extend to the writings of antecedent authors, and therefore specific names published before 1766 cannot be used to the prejudice of names published since that date.†

[It should be here explained, that as the works of Artedi and Scopoli have already been extensively used by ichthyologists and entomologists, the names contained in or used from these authors should not be affected by this provision. This is particularly requisite as regards the generic names of Artedi, afterward used by Linnæus himself. Brisson also, who was a contemporary of Linnæus and acquainted with the 'Systema Naturæ,' defined and published certain genera of birds which are *additional* to those in the twelfth edition of Linnæus's works, and which are therefore of perfectly good authority. But Brisson still adhered to the old mode of designating species by a sentence instead of a word, and therefore while we retain his defined genera, we do not extend the same indulgence to the titles of his species, even when the latter are accidentally binomial in form. For instance, the *Perdix rubra* of Brisson is the *Tetrao rufus* of Linnæus; therefore as we in this case retain the generic name of Brisson and the specific name of Linnæus, the correct title of the species would be *Perdix rufa* (Linn.).

[*Generic names not to be cancelled in subsequent subdivisions.*]—As the number of known species which form the groundwork of zoölogical science is always increasing, and our knowledge of their structure becomes more complete, fresh generalizations continually occur to the naturalist, and the number of genera and other groups requiring appellations is ever becoming more

* "Quis longo ævo recepta vocabula commutaret hodie?"—*Linnæus.*

† If the Xth edition be taken as the limit, which seems to be the tendency among recent writers, especially in this country and in northern Europe, the date would be 1758. The second volume of the XIIth edition bears the date of 1767. Disregard of this important and essential law has brought into conchology and some other branches of zoölogy an almost incredible amount of confusion within a few years, the indefinite names of Link, Klein, Brown, Columa. and other antebinomial and polynomial writers, having been revived and substited for the well known names of Linnæus and later authors. Thus *Dactylus* Klein, 1753, has been substituted for *Oliva* Brug., 1789, by the Messrs. Adams, while for the same genus Gray has substituted *Strephona* Brown. (See also Gunther's Record of Zoölogical Literature, 1864, p. 246).

extensive. It thus becomes necessary to subdivide the contents of old groups and to make their definitions continually more restricted. In carrying out this process, it is an act of justice to the original author that his generic name should never be lost sight of; and it is no less essential to the welfare of the science, that all which is sound in its nomenclature should remain unaltered amid the additions which are continually being made to it. On this ground we recommend the adoption of the following rule:—

§ 3. A generic name, when once established, should never be canceled in any subsequent subdivision of the group, but retained in a restricted sense for one of the constituent portions.

[*Generic names to be retained for the typical portion of the old genus.*]—When a genus is subdivided into other genera, the original name should be retained for that portion of it which exhibits in the greatest degree its essential characters as at first defined. Authors frequently indicate this by selecting some one species as a fixed point of reference, which they term the "type of the genus." When they omit doing so, it may still in many cases be correctly inferred that the *first* species mentioned on their list, if found accurately to agree with their definition, was regarded by them as the type.* A specific name, or its synonyms, will also often serve to point out the particular species which by implication must be regarded as the original type of a genus. In such cases we are justified in restoring the name of the old genus to its typical signification, even when later authors have done otherwise. We submit therefore that:—

§ 4. The generic name should always be retained for that portion of the original genus which was considered typical by the author.

Example.—The genus, *Picumnus* was established by Temminck, and included two groups, one with four toes, the other with three, the *former* of which was regarded by the author as typical. Swainson, however, in raising these groups at a later period to the rank of genera, gave a new name, *Asthenurus*, to the *former* group, and retained *Picumnus* for the *latter*. In this case we have no choice but to restore the name, *Picumnus* Temm., to its correct sense, canceling the name, *Asthenurus* Sw., and imposing a new name on the three-toed group which Swainson had called *Picumnus*.

* This course has been systematically followed by some writers, and when carelessly done has often led to unfortunate and absurd results, especially when applied to the earlier writers, since it often happens that the actual position of the *first* species, in the restricted modern genera, cannot be determined with certainty. Thus in the XIIth edition, Syt. Nat., *Mactra* includes eight species, most of which are now referred to distinct genera, but the original name is variously restricted. Conrad pretends to take the *first* species, *M. Sprengleri*, as the type, and thus forms a group with but *five* species, which had long before received another name, while to the largest group, including the well known European species and proper type, *M. stultorum* (type of Lam. 1801) he applies the name *Trigonella* Da Costa, but (as it would seem) being somewhat doubtful as to the *real* affinity of *M. Sprengleri*, he puts this species also in *Trigonella!* Thus we have in the same catalogue *one species of Mactra*, and that the *first*, appearing in two different genera,—an instance that might be regarded as an accidental error were it not that other cases of like character appear in the same and other lists, viz., *Hemimactra Sayi*, p. 33. appears again as *Spisula* (*Mactromeris*) *Sayi*, on p. 45, being in this case placed in a different "subfamily," and *Anatina trapezoides* Lam., p. 51, appears again on the same page as a synonym of *Periploma inequivalvis*, with no explanation. (See American Journal of Conchology, vols. iii and iv, Appendix, "Catalogue of Recent Mollusca").—v.

[*When no type is indicated, then the original name is to be kept for that subsequent subdivision which first received it.*]—Our next proposition seems to require no explanation:—

§ 5. When the evidence as to the original type of a genus is not perfectly clear and indisputable, then the person who first subdivides the genus may affix the original name to any portion of it at his discretion, and no later author has a right to transfer that name to any other part of the original genus.*

[*A later name of the same extent as an earlier to be wholly canceled.*]—When an author infringes the law of priority by giving a new name to a genus which has been properly defined and named already, the only penalty which can be attached to this act of negligence or injustice, is to expel the name so introduced from the pale of the science. It is not right, then, in such cases to restrict the meaning of the latter name so that it may stand side by side with the earlier one, as has sometimes been done. For instance, the genus, *Monaulus* Vieill., 1816, is a precise equivalent to *Lophophorus* Temm., 1813, both authors having adopted the same species as their type, and therefore, when the latter genus came in the course of time to be divided into two, it was incorrect to give the condemned name, *Monaulus*, to one of the portions. To state this succinctly:—

§ 6. When two authors define and name the same genus, *both making it exactly of the same extent*, the later name should be canceled *in toto*, and not retained in a modified sense.†

This rule admits of the following exception:—

§ 7. Provided, however, that if these authors select their respective types from different sections of the genus, and these sections be afterward raised into genera, then both these names may be retained in a restricted sense for the new genera respectively.

Example.—The names, *Œdemia* and *Melanetta*, were originally coextensive synonyms, but their respective types were taken from different sections, which are now raised into genera, distinguished by the above titles.

[No special rule is required for the cases in which the later of two generic names is so defined as to be *less extensive* in signification than the earlier, for if the later includes the type of the earlier genus, it would be canceled by the operation of § 4; and if it does not include that type, it is in fact a distinct genus.]

* This law, though very important and necessary, is too often neglected, and at times seems difficult of application. Thus *Astræa* Lam., 1801, had two species only, as types of two sections. Oken, in 1815, named the first group, *Favia*, and Blainville afterward named the second group, *Siderastræa*. Edwards and Haime adopt *Astræa* for the latter, in accordance with this rule, but later observations show that it does not belong to the family, *Astræidæ*, nor even to the same suborder, but to the *Fungidæ*, so that if we adopt this view it would require numerous changes in the names of the families, subfamilies, and suborder. On the other hand *Favia* has become pretty well established as the name of a large and well-known genus, and yet it appears necessary to reject it for *Astræa*.—V.

† These discarded names may, however, be *tolerated*, if they have been afterward proposed in a totally new sense, though we trust that in future no one will *knowingly* apply an old name, whether now adopted or not, to a new genus. (See proposition *c*, *infra*).

But when the later name is *more extensive* than the earlier, the following rule comes into operation:—

[*A later name equivalent to several earlier ones is to be canceled.*]—The same principle which is involved in § 6 will apply to § 8.

§ 8. If the later name be so defined as to be equal in extent to two or more previously published genera, it must be canceled *in toto.*

Example.—*Psarocolius* Wagl., 1827, is equivalent to five or six genera previously published under other names, therefore *Psarocolius* should be canceled.

If these previously published genera be *separately adopted* (as is the case with the equivalents of *Psarocolius*), their original names will of course prevail; but if we follow the later author in combining them into one, the following rule is necessary:—

[*A genus compounded of two or more previously proposed genera whose characters are now deemed insufficient, should retain the name of one of them.*]—It sometimes happens that the progress of science requires two or more genera, founded on insufficient or erroneous characters, to be combined together into one. In such cases the law of priority forbids us to cancel *all* the original names and impose a *new* one on this compound genus. We must therefore select some one species as a type or example, and give the generic name which it formerly bore to the whole group now formed. If these original generic names differ in date, the oldest one should be the one adopted.

§ 9. In compounding a genus out of several smaller ones, the earliest of them, if otherwise unobjectionable, should be selected, and its former generic name be extended over the new genus so compounded.

Example.—The genera, *Accentor* and *Prunella* of Vieillot, not being considered sufficiently distinct in character, are now united under the general name of *Accentor*, that being the earliest.

We now proceed to point out those few cases which form exceptions to the law of priority, and in which it becomes both justifiable and necessary to alter the names originally imposed by authors.

[*A name should be changed when previously applied to another group which still retains it.*]—It being essential to the binomial method to indicate objects in natural history by means of *two words* only, without the aid of any further designation, it follows that a generic name should only have one meaning—in other words, that two genera should never bear the same name. For a similar reason, no two species in the same genus should bear the same name.* When these cases occur, the later of the two duplicate names should be canceled, and a new term, or the earliest synonym, if there be any, substituted.

* The principle of this rule is sufficiently obvious and simple, but its application is not always easy, as when a well established specific name is found to be identical with an older one which may be an old and long neglected synonym of some other species of the same genus. Also when the identity of the specific names of two species, originally in one genus, is not discovered until the species have been referred to different genera. Thus *Tellina tenera* Leach, antedates *Tellina tenera* Say, but the former was referred to *Macoma* before the name of the latter was changed. Should it now be changed? If not, when on this account a specific name has been changed *before* the generic separation, should the rejected name be restored *after* the separation? We think not.—V.

When it is necessary to form new words for this purpose, it is desirable to make them bear some analogy to those which they are destined to supersede, as where the genus of birds, *Plectorhynchus*, being preoccupied in Ichthyology, is changed to *Plectorhamphus*. It is, we conceive, the bounden duty of an author, when naming a new genus, to ascertain by careful search that the name which he propo-es to employ has not been previously adopted in other departments of natural history.* By neglecting this precaution he is liable to have the name altered and his authority superseded by the first subsequent author who may detect the oversight, and for this result, however unfortunate, we fear there is no remedy, though such cases would be less frequent if the detectors of these errors would, as an act of courtesy, point them out to the author himself, if living, and leave it to him to correct his own inadvertencies.† This occasional hardship appears to us to be a less evil than to permit the practice of giving the same generic name *ad libitum* to a multiplicity of genera. We submit, therefore, that:—

§ 10. A name should be changed which has before been proposed for some other genus in zoölogy or botany,‡ or for some other species in the same genus, when still retained for such genus or species.

[*A name whose meaning is glaringly false may be changed.*]—Our next proposition has no other claim for adoption than that of being a concession to human infirmity. If such proper names of places as Covent Garden, Lincoln's Inn Fields, Newcastle, Bridgewater, &c., no longer suggest the ideas of gardens, fields, castles, or bridges, but refer the mind with the quickness of thought to the particular localities which they respectively designate, there seems no reasons why the proper names used in natural history should not equally perform the office of correct indication, even when their etymological meaning may be wholly inapplicable to the object which they typify. But we must remember that the language of science has but a limited currency, and hence the words which compose it do not circulate with the same freedom and rapidity as those which belong to every-day life. The attention is consequently liable in scientific studies to be diverted from the contemplation of the thing signified to the etymological meaning of the sign, and hence it is necessary to provide that the latter shall not be such as to propagate actual error. Instances of this kind are indeed very rare, and in some cases, such as that of *Monodon*, *Caprimulgus*, *Paradisea apoda*, and *Monoculus*, they have acquired sufficient currency no longer to cause error, and are therefore retained without change. But when we find a Batrachian reptile named in violation of its true affinities *Mastodonsaurus*, a Mexican species

* This laborious and difficult research is now greatly facilitated by the very useful work of M. Agassiz, entitled "Nomenclator Zoologicus," and "Index Universalis" to that work.

† This slight penalty for negligence is, perhaps, one of the strongest incentives to greater caution. To point out an author's errors, unless a personal friend, too often results in unpleasantness, and frequently fails in its object, since many men prefer to be corrected by another writer, rather than retract personally. Each author should regard it as a duty to correct every error in nomenclature at the earliest suitable opportunity, that its diffusion may be arrested as soon as possible. Monographic memoirs and general works are, however, the most proper places for such changes.—V.

‡ The number of names now in use and well established in both botany and zoölogy, is so great as to render their change on this account very objectionable and nearly impossible, as no concert of opinion is likely to be obtained on this point. But all appear to admit the necessity of allowing the same name to be used but once in either kingdom.—V.

termed (through erroneous information of its habitat) *Picus cafer*, or an olive-colored one *Muscicapa atra*, or when a name is derived from an accidental monstrosity, as in *Picus semirostris* of Linnæus, and *Helix disjuncta* of Turton, we feel justified in canceling these names, and adopting that synonym which stands next in point of date.* At the same time we think it right to remark that this privilege is very liable to abuse, and ought therefore to be applied only to extreme cases and with great caution. With these limitations we may concede that:—

§ 11. A name may be changed when it implies a false proposition which is likely to propagate important errors.

[*Names not clearly defined may be changed.*]—Unless a species or group is intelligibly defined when the name is given, it cannot be recognized by others, and the signification of the name is consequently lost. Two things are necessary before a zoölogical term can acquire any authority, viz., *definition* and *publication*. Definition properly implies a distinct exposition of essential characters, and in all cases we conceive this to be indispensable, although some authors maintain that a mere enumeration of the component species, or even of a single type, is sufficient to authenticate a genus.† To constitute *publication*, nothing short of the insertion of the above particulars *in a printed book* can be held sufficient. Many birds, for instance, in the Paris and other continental museums, shells in the British Museum (in Dr. Leach's time) and fossils in the Scarborough and other public collections, have received MS. names, which will be of no authority until they are published with characters.‡ Nor can any unpublished descriptions, however exact (such as those of Forster, which are still shut up in a MS. at Berlin), claim any right of priority till published, and then only from the date of their publication. The same rule applies to cases where groups or species are pub-

* Under this rule it would be well to exclude all names that refer to abnormal, diseased and mutilated structures, and to deformities caused by parasites. Thus *Echinus gibbosus* Val. proves to be identical with our *Euryechinus imbecillis*, but the gibbosity is caused only by a parasitic crab lodged in the anal region, and is not present in normal specimens. *Tænia mediocannellata* was so named from an abnormal specimen. Such names are not uncommon and are always liable to mislead students and perpetuate error.—V.

† The custom of establishing genera by merely naming one or more species, without indicating any generic character or even giving figures, is exceedingly objectionable and liable to lead to confusion, especially when, as often happens, the same author afterward *describes* the genus and adopts a different type. Thus *Toxopneustes* Ag. was originally *named* with "Echinus pileolus" as its type; afterward it was *described* and *E. tuberculatus* Lam. (a species generically distinct from the former) was named as the type; five years later (in Catal. Rais.) the genus was extended so as to include not only *E. tuberculatus* and its allies, but also several other forms which have since been separated as genera, but *E. pileolus* was not included; in later works the name has been restricted to *E. Dröbachiensis* and allied species (our genus, *Euryechinus*) which were referred to the *restricted* genus, Echinus, when Toxopneustes was originally separated. Finally a new generic name, *Toxocidaris* A. Ag., has recently been proposed for the species allied to *T. tuberculatus*. In this case it becomes difficult to determine whether *Toxopneustes* should be restricted to the genus represented by *E. pileolus* (*Boletia*) or to that having *E. tuberculatus* as its type (*Toxocidaris*). Other serious difficulties arise when, as often happens, an author's type is incorrectly identified and does not agree with the original species, bearing the same specific name, even in generic characters.—V.

‡ These MS. names are in all cases liable to create confusion, and it is therefore much to be desired that the practice of using them should be avoided in future.

lished but not defined, as in some museum catalogues, and in Lesson's 'Traité d'Ornithologie,' where many species are enumerated by name, without any description or reference by which they can be identified. Therefore:—

§ 12. A name which has never been clearly defined in some published work should be changed for the earliest name by which the object shall have been so defined.

[*Specific names, when adopted as generic, must be changed.*]—The necessity for the following rule will be best illustrated by an example. The *Corvus pyrrhocorax* Linn., was afterward advanced to a genus under the name of *Pyrrhocorax.* Temminck adopts this generic name, and also retains the old specific one, so that he terms the species *Pyrrhocorax pyrrhocorax.* The inelegance of this method is so great as to demand a change of the generic name.* We propose, therefore, that:—

§ 13. A specific name must not be altered in order to use that name for the genus; where this has been already done the old specific name must be restored, and a new generic name given to prevent an unharmonious repetition.

N.B.—It will be seen, however, below that we strongly object to the further continuance of this practice of elevating specific names into generic.

[*Latin Orthography to be adhered to.*]—On the subject of orthography it is necessary to lay down one proposition:—

§ 14. In writing zoölogical names, the rules of Latin orthography must be adhered to.

In Latinizing Greek words there are certain rules of orthography known to classical scholars which must never be departed from. For instance, the names which modern authors have written *Aipucnemia*, *Zenophasia*, *poiocephala*, must, according to the laws of etymology, be spelt *Æpycnemia*, *Xenophasia*, and *pœocephala.* In Latinizing modern words the rules of classic usage do not apply, and all that we can do is to give to such terms as classical an appearance as we can, consistently with the preservation of their etymology. In the case of European words whose orthography is fixed, it is best to retain the original form, even though it may include letters and combinations unknown in Latin. Such words, for instance, as *Woodwardi*, *Knighti*, *Bullocki*, *Eschscholtzi*, would be quite unintelligible if they were Latinized into *Vudvardi*, *Cnichti*, *Bullocci*, *Essolzi*, &c. But words of barbarous origin, having no fixed orthography, are more pliable, and hence, when adopted into the Latin, they should be rendered as classical in appearance as is consistent with the preservation of their original sound. Thus

* This seems most necessary in those numerous instances where adjective specific names, or even substantives in the genitive, have been raised to the rank of generic names. Thus *Venus mercenaria* was changed to *Mercenaria violacea*, and finally many recent writers have restored the old specific name, so that its name stands at present *Mercenaria mercenaria!* The well known case of the soup-shell of Rumphius, *Tellina gari*, is another marked instance of the absurd results of such practises. Schumacher raised the species to generic rank, under the genitive term, *Gari*, and the original specific name having been restored, the species appears in recent works under the ridiculous "name," *Gari gari!* And yet it is said that *Gari gari* is not the original *soup-shell* of Rumph after all! When the specific name is a substantive the result is, perhaps, less absurd, though still very objectionable. Thus we have among our common shells *Ensis ensis*, *Gemma gemma*, etc.—V.

the words *Tockus*, *awsuree*, *argoondah*, *kundoo*, &c., should when Latinized, have been written *Toccus*, *ausure*, *argunda*, *cundu*, &c. Such words ought, in all practicable cases, to have a Latin termination given them, especially if they are used generically.

In Latinizing proper names, the simplest rule appears to be to use the termination *-us*, genitive *-i*, when the name ends with a consonant,* as in the above examples; and *-ius*, gen. *-ii*, when it ends with a vowel, as, *Latreille*, *Latreillii*, &c.

In converting Greek words into Latin the following rules must be attended to:—

Greek.		Latin.
αι	becomes	æ.
ει	"	i.
ος	terminal,	us.
ον	"	um.
ου	becomes	u.
οι	"	œ.
υ	"	y.

Greek.		Latin.
θ	becomes	th.
φ	"	ph.
χ	"	ch.
κ	"	c.
γχ	"	nch.
γγ	"	ng.
'	"	h.

When a name has been erroneously written and its orthography has been afterward amended, we conceive that the authority of the original author should still be retained for the name, and not that of the person who makes the correction.

PART II.

RECOMMENDATIONS FOR IMPROVING THE ZOOLOGICAL NOMENCLATURE IN FUTURE.

The above propositions are all which, in the present state of the science, it appears practicable to invest with the character of laws. We have endeavored to make them as few and simple as possible, in the hope that they may be the more easily comprehended and adopted by naturalists in general. We are aware that a large number of other regulations, some of which are hereafter enumerated, have been proposed and acted upon by various authors who have undertaken the difficult task of legislating on the subject; but as the enforcement of such rules would in many cases undermine the invaluable principle of priority, we do not feel justified in adopting them. At the same time we fully admit that the rules in question are, for the most part, founded on just criticism, and therefore, though we do not allow them to operate retrospectively, we are willing to retain them for future guidance. Although it is of the first importance that the principle of priority should be held paramount to all others, yet we are not blind to the desirableness of rendering our scientific language palatable to the scholar and the man of taste. Many zoölogical terms, which are now marked with the stamp of perpetual currency, are yet so far defective in construction, that our inability to remove them without infringing the law of priority may be a subject of regret. With these terms we cannot interfere, if we adhere to the principles above laid down; nor is there even any remedy, if authors insist on infringing the rules of good taste by introducing into the science words of the same inelegant or unclassical character in future. But that which cannot be enforced by law may, in some measure, be effected by persuasion; and with this view we submit the following propositions to naturalists, under the title of *Recommendations for the Improvement of Zoological Nomenclature in future.*

[*The best names are Latin or Greek characteristic words.*]—The classical languages being selected for zoölogy, and words being more easily remembered in proportion as they are expressive, it is self-evident that:—

§ A. The *best* zoölogical names are those which are derived from the Latin or Greek, and express some distinguishing characteristic of the object to which they are applied.

* There are many names, which, though ending with a consonant, are more euphonious if terminated with *-ius*.—V.

[*Classes of objectionable names.*]—It follows from hence that the following classes of words are more or less objectionable in point of taste, though, in the case of *genera*, it is often necessary to use them, from the impossibility of finding characteristic words which have not before been employed for other genera. We will commence with those which appear the least open to objection, such as,

a. Geographical names.—These words being for the most part adjectives can rarely be used for *genera*. As designations of *species* they have been so strongly objected to, that some authors (Wagler, for instance) have gone the length of substituting fresh names wherever they occur; others (*e. g.* Swainson) will only tolerate them where they apply *exclusively*. We are by no means disposed to go to this length. It is not the less true that the *Hirundo javanica* is a Javanese bird, even though it may occur in other countries also, and though other species of *Hirundo* may occur in Java. The utmost that can be urged against such words is, that they do not tell the *whole truth*. However, as so many authors object to this class of names, it is better to avoid giving them, except where there is reason to believe that the species is confined to the country whose name it bears.

b. Barbarous names.—Some authors protest strongly against the introduction of exotic words into our Latin nomenclature, others defend the practice with equal warmth. We may remark, first, that the practice is not contrary to classical usage, for the Greeks and Romans did occasionally, though with reluctance, introduce barbarous words in a modified form into their respective languages. Secondly, the preservation of trivial names which animals bear in their native countries is often of great use to the traveler in aiding him to discover and identify species. We do not therefore consider, if such words have a Latin termination given to them, that the occasional and judicious use of them as scientific terms can be justly objected to.

c. Technical names.—All words expressive of trades and professions have been by some writers excluded from zoölogy, but without sufficient reason. Words of this class, *when carefully chosen*, often express the peculiar characters and habits of animals in a metaphorical manner, which is highly elegant. We may cite the generic terms *Arvicola*, *Lanius*, *Pastor*, *Tyrannus*, *Regulus*, *Ploccus*, &c., as favorable examples of this class of names.

d. Mythological or historical names.—When these have no perceptible reference or allusion to the characters of the object on which they are conferred, they may properly be regarded as unmeaning and in bad taste. Thus the generic names *Lesbia*, *Leilus*, *Remus*, *Corydon*, *Pasiphae*, have been applied to a Humming-bird, a Butterfly, a Beetle, a Parrot, and a Crab, respectively, without any perceptible association of ideas. But mythological names may sometimes be used as generic with the same propriety as technical ones, in cases where a direct allusion can be traced between the narrated actions of a personage and the observed habits or structure of an animal. Thus when the name *Progne* is given to a Swallow, *Clotho* to a Spider, *Hydra* to a Polyp, *Athene* to an Owl, *Nestor* to a grey-headed Parrot, &c., a pleasing and beneficial connection is established between classical literature and physical science.

e. Comparative names.—The objections which have been raised to words of this class are not without foundation. The names, no less than the definitions of objects, should where practicable, be drawn from positive and self-evident characters, and not from a comparison with other objects, which may be less known to the reader than the one before him. Specific names expressive of comparative size are also to be avoided, as they may be rendered inaccurate by the after discovery of additional species. The names *Picoides*, *Emberizoides*, *Pseudoluscinia*, *rubeculoides*, *maximus*, *minor*, *minimus*, &c., are examples of this objectionable practice.

f. Generic names compounded from other genera.—These are in some degree open to the same imputation as comparative words; but as they often serve to express the position of a genus as intermediate to, or allied with, two other genera, they may occasionally be used with advantage. Care must be taken not to adopt such compound words as are of too great length, and not to corrupt them in trying to render them shorter. The names *Gallopavo*, *Tetraogallus*, *Gypaetos*, are examples of the appropriate use of compound words.

g. Specific names derived from persons.—So long as these complimentary designations are used with moderation, and are restricted to persons of eminence as scientific zoölogists, they may be employed with propriety in cases where expressive or characteristic words are not to be found. But we fully concur with those who censure the practice of naming species after persons of no scientific reputation, as curiosity dealers (e. g. *Caniveti*, *Boissoneauti*), Peruvian priestesses (*Cora*, *Amazilia*), or Hottentots (*Klassi*).

h. Generic names derived from persons.—Words of this class have been extensively used in botany, and therefore it would have been well to have excluded them wholly from zoölogy, for the sake of obtaining a *memoria technica* by which the name of a genus would at once tell us to which of the kingdoms of nature it belonged. Some personal generic names have, however, crept into zoölogy, as *Cuvieria*, *Mulleria*, *Rossia*, *Lessonia*, &c., but they are rare in comparison with those of botany, and it is perhaps desirable not to add to their number.

i. Names of harsh and inelegant pronunciation.—These words are grating to the ear, either from inelegance of form, as *Huhua*, *Yuhina*, *Craxirex*, *Eschscholtzi*, or from too great length, as *chirostrongylostinus*, *Opetiorhynchus*, *brachypodioides*, *Thecodontosaurus*. It is needless to enlarge on the advantage of consulting euphony in the construction of our language. As a general rule it may be recommended to avoid introducing words of more than five syllables.

k. Ancient names of animals applied in a wrong sense.—It has been customary in numerous cases to apply the names of animals found in classic authors at random to exotic genera or species which were wholly unknown to the ancients. The names *Cebus*, *Callithrix*, *Spiza*, *Kitta*, *Struthus*, are examples. This practice ought by no means to be encouraged. The usual defence for it is, that it is impossible now to identify the species to which the name was anciently applied. But it is certain that if any traveller will take the trouble to collect the vernacular names used by the modern Greeks and Italians for the Vertebrata and Mollusca of southern Europe, the meaning of the ancient names may in most cases be determined with the greatest precision. It has been well remarked that a Cretan fisher-boy is a far better commentator on Aristotle's 'History of Animals' than a British or German scholar. The use, however, of ancient names, *when correctly applied*, is most desirable, for "in framing scientific terms, the appropriation of old words is preferable to the formation of new ones."*

l. Adjective generic names.—The names of genera are in all cases essentially substantive, and hence adjective terms cannot be employed for them without doing violence to grammar. The generic names *Hians*, *Criniger*, *Cursorius*, *Nitidula*, &c., are examples of this incorrect usage.†

m. Hybrid names.—Compound words, whose component parts are taken from two different languages are great deformities in nomenclature, and naturalists should be especially guarded not to introduce any more such terms into zoölogy, which furnishes too many examples of them already. We have them compounded of Greek and Latin, as *Dendrofalco*, *Gymnocorvus*, *Monoculus*, *Arborophila*, *flavigaster*; Greek and French, as *Jacamaralcyon*, *Jacamerops*; and Greek and English, as *Bullockoides*, *Gilbertsocrinites*.

* Whewell, Phil. Ind. Sc., vol. i, p. lxvii; Nov. Org. Ren. iv, iii.

† Generic names in the genitive should also be included. See note p. 103.—V.

n. Names closely resembling other names already used.—By Rule 10 it was laid down that when a name is introduced which is *identical* with one previously used, the later one should be changed. Some authors have extended the same principle to cases where the later name, when correctly written, only approaches in form, without wholly coinciding with the earlier. We do not, however, think it advisable to make this law imperative, first, because of the vast extent of our nomenclature, which renders it highly difficult to find a name which shall not bear more or less resemblance in sound to some other; and, secondly, because of the impossibility of fixing a limit to the degree of approximation beyond which such a law should cease to operate. We content ourselves, therefore, with putting forth this proposition merely as a recommendation to naturalists, in selecting generic names, to avoid such as too closely approximate to words already adopted. So with respect to species, the judicious naturalist will aim at variety of designation, and will not, for example, call a species *virens* or *virescens* in a genus which already possesses a *viridis*.

o. Corrupted words.—In the construction of compound Latin words, there are certain grammatical rules which have been known and acted on for two thousand years, and which a naturalist is bound to acquaint himself with before he tries his skill in coining zoölogical terms. One of the chief of these rules is, that in compounding words all the radical or essential parts of the constituent members must he retained, and no change made except in the variable terminations. But several generic names have been lately introduced which run counter to this rule, and form most unsightly objects to all who are conversant with the spirit of the Latin language. A name made up of the first half of one word and the last half of another, is as deformed a monster in nomenclature as a Mermaid or a Centaur would be in zoölogy; yet we find examples in the names, *Corcorax* (from *Corvus* and *Pyrrhocorax*) *Cypsnagra* (from *Cypselus* and *Tanagra*), *Merularis* (*Merula* and *Synallaxis*), *Loxigilla* (*Loxia* and *Fringilla*), &c. In other cases, where the *commencement* of both the simple words is retained in the compound, a fault is still committed by cutting off too much of the radical and vital portions, as is the case in *Bucorvus* (from *Buceros* and *Corvus*), *Ninox* (*Nisus* and *Noctua*), &c.

p. Nonsense names.—Some authors having found difficulty in selecting generic names which have not been used before, have adopted the plan of coining words at random, without any derivation or meaning whatever. The following are examples: *Viralva*, *Xema*, *Azeca*, *Assiminia*, *Quedius*, *Spisula*. To the same class we may refer *anagrams* of other generic names, as *Dacelo* and *Cedola* of *Alcedo*, *Zapornia* of *Porzana*, &c. Such verbal trifling as this is in very bad taste, and is especially calculated to bring the science into contempt. It finds no precedent in the Augustan age of Latin, but can be compared only to the puerile quibblings of the middle ages. It is contrary to the genius of all languages, which appear never to produce new words by spontaneous generation, but always to derive them from some other source, however distant or obscure. And it is peculiarly annoying to the etymologist, who, after seeking in vain through the vast storehouses of human language for the parentage of such words, discovers at last that he has been pursuing an *ignis fatuus*.

q. Names previously canceled by the operation of § 6.—Some authors consider that when a name has been reduced to a synonym by the operations of the laws of priority, they are then at liberty to apply it at pleasure to any new group which may be in want of a name. We consider, however, that when a word has once been proposed in a given sense, and has afterward sunk into a synonym, it is far better to lay it aside for ever than to run the risk of making confusion by re-issuing it with a new meaning attached.*

* It cannot always be certainly known whether a name has really become a permanent synonym, for the limits of genera are continually being changed. Therefore names once used can seldom be again employed with safety.—V.

r. Specific names raised into generic.—It has sometimes been the practice in subdividing an old genus to give the lesser genera so formed, the names of their respective typical species. Our Rule 13 authorizes the forming a new generic name in such cases; but we further wish to state our objections to the practice altogether. Considering as we do that the original specific names should as far as possible be held sacred, both on the grounds of justice to their authors and of practical convenience to naturalists, we would strongly dissuade from the *further continuance* of a practice which is gratuitous in itself, and which involves the necessity of altering old names or making new ones.

We have now pointed out the principal rocks and shoals which lie in the path of the nomenclator; and it will be seen that the navigation through them is by no means easy. The task of constructing a language which shall supply the demands of scientific accuracy on the one hand, and of literary elegance on the other, is not to be inconsiderately undertaken by unqualified persons. Our nomenclature presents but too many flaws and inelegancies already, and as the stern law of priority forbids their removal, it follows that they must remain as monuments of the bad taste or bad scholarship of their authors to the latest ages in which zoölogy shall be studied.

[*Families to end in* idæ, *and Subfamilies in* inæ.]—The practice suggested in the following proposition has been adopted by many recent authors, and its simplicity and convenience is so great that we strongly recommend its universal use.*

§ B. It is recommended that the assemblages of genera, termed *families*, should be uniformly named by adding the termination, *idæ*, to the name of the earliest known, or most typically characterized genus in them; and that their subdivisions, termed *subfamilies*, should be similarly constructed with the termination, *inæ*.

These words are formed by changing the last syllable of the genitive case into *idæ* or *inæ*, as *Strix*, *Strigis*, *Strigidæ*, *Buceros*, *Bucerotis*, *Bucerotidæ*, not *Strixidæ*, *Buceridæ*.

[*The authority for a species, exclusive of the genus, to be followed by a distinctive expression.*]—The systematic names of zoölogy being still far from that state of fixity which is the ultimate aim of the science, it is frequently necessary for correct indication to append to them the name of the person on whose authority they have been proposed. When the same person is authority both for the specific and generic name, the case is very simple; but when the specific name of one author is annexed to the generic name of another, some difficulty occurs. For example, the *Musicapa crinita* of Linnæus belongs to the modern genus, *Tyrannus* of Vieillot; but Swainson was the first to apply the specific name of Linnæus to the generic one of Vieillot. The question now arises, Whose authority is to be quoted for the name, *Tyrannus crinitus*? The expression, *Tyrannus crinitus* Linn., would imply what is untrue, for Linnæus did not use the term *Tyrannus*; and *Tyrannus crinitus* Vieill., is equally incorrect, for Vieillot did not adopt the name, *crinitus*. If we call it *Tyrannus crinitus* Sw., it would imply that Swainson was the first to describe the species, and Linnæus would be robbed of his due credit. If we term it, *Tyrannus*, Vieill., *crinitus*, Linn., we use a form which, though expressing the facts correctly, and therefore not without ad-

* There are some generic names that will not readily receive these terminations, and as numerous other forms of family and subfamily names are already in good use, a little more latitude might well be allowed in this matter.—V.

vantage in particular cases where great exactness is required, is yet too lengthy and inconvenient to be used with ease and rapidity. Of the three persons concerned with the construction of a binomial title in the case before us, we conceive that the author who *first* describes and names a species which forms the ground work of later generalizations, possesses a higher claim to have his name recorded than he who afterward defines a genus which is found to embrace that species, or who may be the mere accidental means of bringing the generic and specific names into contact. By giving the authority for the *specific* name in preference to all others, the inquirer is referred *directly* to the original description, habitat, &c., of the species, and is at the same time reminded of the date of its discovery; while genera, being less numerous than species, may be carried in the memory, or referred to in systematic works without the necessity of perpetually quoting their authorities. The most simple mode then, for ordinary use, seems to be, to append to the original authority for the species, when not applying to the genus also, some distinctive mark implying an exclusive reference to the *specific* name, as *Tyrannus crinitus* (Linn.), and to omit this expression when the same authority attaches to both genus and species, as *Ostrea edulis* Linn.* Therefore :—

§ C. It is recommended that the authority for a specific name, *when not applying to the generic name also*, should be expressed thus, (Linn.), as *Tyrannus crinitus* (Linn.).

[*New genera and species to be defined* amply *and* publicly.]—A large proportion of the complicated mass of synonyms, which has now become the opprobrium of zoölogy, has originated either from the slovenly and imperfect manner in which species and groups have been originally defined, or from their definitions having been inserted in obscure local publications, which have never obtained an extensive circulation. Therefore, although under § 12 we have conceded that mere insertion in a printed book is sufficient for *publication*, yet we would strongly advise the authors of new groups always to give, in the first instance, a full and accurate definition of their characters, and to insert the same in such periodical or other works as are likely to obtain an immediate and extensive circulation.† To state this briefly :—

* If but *one* person's name can be allowed as authority it should, without doubt, be that of the author who has given the *full name*, as adopted, but in catalogues and other works where no synonym is given, it would be well to write also the name of the original describer, when not the same, enclosing it in a parenthesis for distinction. But in works giving synonymy this is unnecessary. (See the articles in this Journal referred to above; also the amended rules of the American Association.) The name of the authority should be regarded rather as a matter of convenience than as a means of conferring a supposed *honor* on the author, discoverer or describer,—a distinction which often becomes a disgrace if coupled with bad and careless descriptions or objectionable names.

There is a great disagreement among authors as to the punctuation that should intervene between a name and the authority, the same author often using two or more systems in the same volume, as is the case, for example, in the works of Cuvier, Agassiz, and Linné, who often use indifferently a comma or else no punctuation. The best usage appears to be without any punctuation, the authority in this case being understood to be a noun in the genitive, though written in the nominative form, or more frequently abbreviated.—v.

† Since *publication* implies both printing and *distribution*, it is obvious that the date when a memoir was read (often only by title) is not to be regarded as the date of actual *publication* of genera and species. And yet many Societies give in their publications *only* the dates when the papers were read,—often several months or a year before their real publication. In this country this is especially the case with the Proceedings of the Philadelphia Academy. Many Societies have adopted the more just and reasonable custom of giving the actual date of publication of each number, part, or signature.—v.

§ D. It is recommended that new genera or species be *amply* defined, published, and *extensively* circulated in the first instance.

[*The names to be given to subdivisions of genera to agree in gender with the original genus.*]—In order to preserve specific names as far as possible in an unaltered form, whatever may be the changes which the genera to which they are referred may undergo, it is desirable, when it can be done with propriety, to make the new subdivisions of genera agree *in gender* with the old groups from which they are formed. This recommendation does not, however, authorize the changing the gender or termination of a genus already established. In brief:—

§ E. It is recommended that in subdividing an old genus in future, the names given to the subdivisions should agree in gender with that of the original group.

[*Etymologies and types of new genera to be stated.*]—It is obvious that the names of genera would in general be far more carefully constructed, and their definitions would be rendered more exact, if authors would adopt the following suggestion:—

§ F. It is recommended that in defining new genera the etymology of the name should be always stated, and that one species should be invariably selected as a type or standard of reference.

In concluding this outline of a scheme for the rectification of zoölogical nomenclature, we have only to remark, that almost the whole of the propositions contained in it may be applied with equal correctness to the sister science of botany. We have preferred, however, in this essay to limit our views to zoölogy, both for the sake of rendering the question less complex, and because we conceive that the botanical nomenclature of the present day stands in much less need of distinct enactment than the zoölogical. The admirable rules laid down by Linnæus, Smith, Decandolle, and other botanists (to which no less than to the works of Fabricius, Illiger, Vigors, Swainson, and other zoölogists, we have been much indebted in preparing the present document) have always exercised a beneficial influence over their disciples. Hence the language of botany has attained a more perfect and stable condition than that of zoölogy.; and if this attempt at reformation may have the effect of advancing zoölogical nomenclature beyond its present backward and abnormal state, the wishes of its promoters will be fully attained.