

Professor C. F. Brackett, for thirty-five years head of the department of physics and originator of the graduate department of electrical engineering, has been presented to the departments and forms the nucleus for their libraries. These are supplemented by any desired work on engineering or physics from the general library of the university. Three book funds are available for purchase of books and of periodicals for the Palmer Laboratory Library.

A notable feature of the exterior of the building is found in the two statues in marble of Benjamin Franklin and Professor Joseph Henry, and a portrait relief of Professor Brackett. These were executed under the supervision of Mr. Daniel C. French. The statues show Franklin in familiar colonial garb and Professor Henry in academic robe. The statues and the relief are most successful.

Through the generosity of Messrs. David B. Jones and Thomas D. Jones, of Chicago, loyal graduates of the university, a fund of \$200,000 has been provided for endowment. The income of this fund, according to the terms of the deed of gift, may not be used for salaries for teachers, for janitor's services, for repairs or up-keep of the building, or for heat, light, gas, water or power. It may be used for the payment of scientific helpers and research assistants, for the purchase of apparatus and supplies, for accessions to the libraries, and for the satisfaction of the general scientific needs of the two departments of the university for which the Palmer Laboratory was erected.

HOWARD McCLENAHAN

PRACTICAL NOMENCLATURE

SHOULD general acquiescence in the decisions of the Nomenclatural Commission of the International Zoological Congress bring

about that stability of names for which we have been striving, to what shall we have attained when that goal has been reached? What, in view of past results and present methods, will our system of names be like? Will it be the simple comprehensible binomial system that Linnæus devised? Alas, no. It will be a vast jungle of names, through which no one can see more than a few paces from his own door. No one can comprehend it; no one thinks of trying to master it; it baffles and hinders and masters us.

Synonymy is far from being the greatest of our nomenclatural troubles. Let any one who doubts this examine the Great Book of Names, which now surpasses the unabridged dictionary, without a definition in it. Let him remember that this Great Book is reserved for the names of genera only, other names not being included in it. Let him, in the group that he knows best, compare the lists of genera that have been described from decade to decade, noting the ever-accelerated rate of increase, and let him think what future editions of the Great Book will be like. Then let him note how few names in the group—in any group—are called into question, and he will realize how little the burden of terminology would be lightened were these few names all adjusted to his complete satisfaction. Synonymy is but the last straw that, added to the appalling load, threatens to break the camel's back.

To be sure, we have added this last straw right boldly. We have made rules, and by them we have all but firmly established and made permanent the following wholly unnecessary evils:

1. We have adopted the mistakes in name construction made by ignorant or careless systematists as a permanent part of our biological literature, which all of us must continue to repeat.

2. We have committed ourselves, likewise, to all sorts of egregious blunders, in cases where names were inappropriately, mistakenly or malevolently assigned.

3. We have accepted the elimination or al-

teration¹ of hundreds of well-known names that are root-names of many more genera within their respective groups: and such derived names, once of great assistance to the memory, have, so to speak, the props knocked from under them.

4. Finally, and most lamentably of all, by our hasty and profitless abandonment of even the best-known family names we have broken with our best traditions and have thrown our biological literature out of joint.

The pursuit of stability through rules of priority that has led to all this is surely one of the most singular of contemporary psychological phenomena. Codes of rules, interpreted by anybody and enforced by nobody have not been able to command the united support of public opinion among us, and we have at last begun to refer our disputes to the international commission for final adjudication. And we seem to be getting results—of the sort hitherto aimed at: *i. e.*, progress in the application of the law of priority. And some of us are beginning to wonder why this commission, if capable of disposing of small matters acceptably, might not have been entrusted with larger ones. Why should it determine merely whether a certain forgotten name, abandoned by its author and never used, is really eligible for use under the rules of the code? It grieves me to see fifteen big brainy men, capable of doing something rational, put into a hole where they are expected to do only such little sinful things as this.

¹A curious case comes to hand in van der Weele's recent and excellent monograph of the Ascalaphidæ (Neuroptera). Van der Weele restores the original spelling *Suhalacsa*, to a genus which Lefebure in 1842 created as an anagram out of the name *Ascalaphus*. (Kolbe made *Phalascusa* by like performance in 1897.) Hagen had in 1866 altered the name of *Suhalacsa*, and in this form it had ever since been used. Now names of this sort are hard to remember at best: yet van der Weele creates two new names with the spelling he has just eliminated, leaving to future generations the task of learning for three closely allied genera the following: *SUHPALACSA*, *SUPHALOMITUS*, *STEPHANOLASCA*. Verily, "What has posterity done for us?"

The object of this article is not to criticize rules or codes, but to suggest an inquiry as to whether there is not a better way of disposing of our nomenclatural trouble than by making it as burdensome as possible and then making it permanent. Names are the handles by means of which we move all our intellectual luggage. The first requisites of handles are that they should be easy to grasp and easy to retain hold of. Our spade and axe and scissors handles are shaped to fit our hands: why should not our generic and family names be shaped to fit our brains? If they are for use, they must be so fitted. Granting that stability is speedily attainable with our present machinery, we have yet need to inquire whether we have fashioned the sort of a set of names that we should seek to perpetuate.

We have been too much taken up with codes, and have given far too little consideration to evils more fundamentally important. Our worst and most permanent difficulties are not due to synonymy, but to the enormous growth of systematic knowledge, and to the natural limitations of men's minds. They are such difficulties as attend vigorous growth in any human enterprise. Changed conditions create new needs.

Our binomial nomenclature is not that of Linnaeus. In the first place it is not binomial; for, even when not dealing with varieties or races, we add to the names of genus and species the names of one or two authors, and thus make it tri- or quadri-nomial. In the second place, it is not simple and straightforward and serviceable as his was. The Linnæan system won its way because it was fit. It reduced the long descriptive Latin phrases previously used for designating species, to two words, only one of which, like a given name, had to be learned for each species. It provided a simple and consistent method for designating additional and unknown species as they should become known. Genera were few, and names were for the most part simple and significant. In a large part they were not new names, but were selected because of the past service they had rendered:

they were fitted to the mental mechanism of the race. Had they been *built*, as multisyllabic heterozygous names are now built, without regard to the limitations of the human mind, it is safe to say that no Linnæan system would ever have come down to us.

But the Linnæan system was better suited to Linnæus's day than to ours. It provided for the recording of progress in systematic knowledge only by means of a proportionate growth in terminology. It could remain simple only while the known organisms were comparatively few. It was inevitable that such a system of names, having no check to overgrowth, should, with the rapid progress in knowledge of the world's fauna and flora, sooner or later be in danger of falling of its own weight. It was inevitable that the new names proposed should grow ever more complex and difficult to handle. Specific names, although often without fitness or significance² have, for the most part, remained simple. The cumbersomeness of generic and family names is due in part to the codes, but in a far larger part to the growth of systematic knowledge. The supply of classic names was not adequate for Linnæus' use. And with the multiplication of genera it has been increasingly harder to find brief, simple names, and far easier to create them by transposing and compounding. Wherefore, let us not lament that the burden of terminology, in so far as it represents the increase of knowledge, has grown heavier, but let us rather seek for improved means of carrying it. Were it not better to spend a little less energy in establishing priority in a system that is old and

cumbrous and overgrown, and a little more in adjusting that system to the conditions of the present and the future, making it more simple, more concise, or at least more manageable? Sometimes, when our clothing gets too heavy for comfort, we leave some of it off. May it not be that the organism we know as a zoological congress is sufficiently adaptable to conditions to rise and do likewise?

After long consideration of this matter, and with much hesitancy, I offer the suggestion that we adopt large groups, as comprehensive as the genera of Linnæus, or as the most modern subfamilies, and designate them by *fit* names, and that we designate subgenera, species and varieties by a simple combination of letters and figures: and that we enter these designations of the lesser groups after the group name in their numerical or alphabetic sequence, and in their historic order—the order in which the descriptions were published. I think I can show that with fewer names than Linnæus used and with designations for species that shall not exceed three places, we can handle comfortably all known forms of life and then go on unencumbered, describing and classifying to our hearts' content.

Let me illustrate the plan by a concrete example. The subfamily Lestinæ of Odonata is a homogeneous group of dragonflies, readily distinguishable by any one. The members of this group long reposed under the generic name *Lestes*, and it would be convenient for all of us if they were so named still. They now bear the names *Sympycna*, *Archilestes*, *Megalestes*, etc., and although any one might know and remember *Lestes*, no one but a specialist in the group could afford to remember all these. Under the system here proposed they would all again bear the name *Lestes* (as would all the additional members of the group that the future might bring to light). The species first described would be *Lestes 1*; the next described, *Lestes 2*; nothing more, provided they have not in the past been separated from *Lestes*. But in order to preserve fully the results of systematic progress, it is

² In this Year of Grace 1910 Mr. N. Banks publishes (in *Psyche* for June) descriptions of six new species of Australian lacewing flies belonging in the genus *Chrysopa* under the following names:

C. olatatis, *C. latotalis*, *C. satilota*,
C. italotis, *C. atalotis*, *C. otalatis*.

These names are perfectly admissible under the rules, and are as good as any others under the interpretation that "A name is a name, and not a definition." But when students of the Australian fauna have dissociated and assimilated the six, they will doubtless remember Mr. Banks.

proposed, not to throw away the new genera, but to designate them by capital letters; the first described (*Sympycna*) by A; the next described (*Megalestes*) by B; the third described (*Archilestes*) by C, etc. Then if the species we designate as *Lestes* 3 were subsequently placed under *Sympycna*, its full designation would be *Lestes* 3A. And if a new species were subsequently described as a species of *Sympycna*, its designation under our system would be *Lestes* A1. Thus two places would be sufficient for the designation of a species until the numbers described under a single name reach 10, and three, until they reach 100. And, moreover, these few places suffice to show two most important things: the subgroup under which the species was described, and the one in which it now reposes. Varietal designations could then be made, as frequently they are now made, by the addition of small letters a, b, c, etc., likewise in their historical order.

I have selected this illustration to avoid even the suspicion of unfairness. The subfamily Lestinae is an example of our present system at its best. For our day and generation the names are unusually brief and significant. For the most part they are pronounceable, and nobody has "monkeyed" with them. Nobody has succeeded in finding a defunct name older than *Lestes* to be dug up and set up instead, to the confusion of the entire group. Synonyms are few and the validity of no generic name is in dispute. And it is safe to say that if things had gone as well elsewhere as in this group, there would not be our present agitation over codes and rules. But I wish to point out that, even so, there are great advantages to be derived from a simpler and more practical system. Therefore, I have set the group in the proposed systematic order in a subsequent column and opposite each species I have written the name it now bears.

This list,³ besides furnishing concise designations,

³I have omitted about two score species of *Lestes* s. str. for want of room: all featureless for our present purpose. All synonyms and all the "problems" of the subfamily are included

Names Proposed	Explanatory Signs	Names Now in Use.	Year of Publication
<i>Lestes</i> 1		<i>Lestes barbara</i> Fabricius	1798
<i>Lestes</i> 2		<i>Lestes sponsa</i> van der Linden	1823
<i>Lestes</i> 3A	*	<i>Sympycna fusca</i> van der Linden	1823
<i>Lestes</i> 4		<i>Lestes viridis</i> van der Linden	1825
<i>Lestes</i> 5	=4	<i>Lestes leucopsalis</i> Charpentier	1825
<i>Lestes</i> 6	=2	<i>Lestes forcipula</i> Charpentier	1825
<i>Lestes</i> 7		<i>Lestes virens</i> Charpentier	1825
<i>Lestes</i> 8	=3A	<i>Sympycna phallata</i> Charpentier	1825
<i>Lestes</i> 9		<i>Lestes macrostigma</i> Eversmann	1836
<i>Lestes</i> 10		<i>Lestes paedisca</i> Eversmann	1836
<i>Lestes</i> 11	=2	<i>Lestes nympha</i> Stephens	1836
<i>Lestes</i> 12	=2	<i>Lestes picteti</i> Fonscolombe	1838
<i>Lestes</i> 13		<i>Lestes rectangularis</i> Say	1839
<i>Lestes</i> 14		<i>Lestes undulata</i> Say	1839
<i>Lestes</i> 15		<i>Lestes eurina</i> Say	1839
<i>Lestes</i> 16		<i>Lestes cingulata</i> Burmeister	1839
<i>Lestes</i> 17		<i>Lestes plagiata</i> Burmeister	1839
<i>Lestes</i> 18		<i>Lestes virgata</i> Burmeister	1839
<i>Lestes</i> 19C	*	<i>Archilestes grandis</i> Rambur	1842
<i>Lestes</i> 20		<i>Lestes tenuata</i> Rambur	1842
<i>Lestes</i> 21		<i>Lestes forcipata</i> Rambur	1842
<i>Lestes</i> 22		<i>Lestes forcipula</i> Rambur	1842
<i>Lestes</i> 23		<i>Lestes pallida</i> Rambur	1842
<i>Lestes</i> 24		<i>Lestes analis</i> Rambur	1842
<i>Lestes</i> 25D	*	<i>Platylestes platystylus</i> Rambur	1842
<i>Lestes</i> 26		<i>Lestes colensoleis</i> White	1846
<i>Lestes</i> 27		<i>Lestes spectrum</i> Kolenati	1856
<i>Lestes</i> 28		<i>Lestes alacris</i> Hagen	1861
<i>Lestes</i> 29		<i>Lestes stulta</i> Hagen	1861
<i>Lestes</i> 30		<i>Lestes congener</i> Hagen	1861
<i>Lestes</i> 31		<i>Lestes vidua</i> Hagen	1861
<i>Lestes</i> 32		<i>Lestes unguiculata</i> Hagen	1861
<i>Lestes</i> 33		<i>Lestes inequalis</i> Walsh	1862
<i>Lestes</i> 34B	*	<i>Megalestes major</i> de Selys	1862
<i>Lestes</i> A1		<i>Sympycna ochracea</i> Montrose	1864
<i>Lestes</i> 35		<i>Lestes smardulus</i> Buchecker	1878
<i>Lestes</i> A2		<i>Sympycna paedisca</i> Brauer	1880
<i>Lestes</i> A3		<i>Sympycna annulata</i> de Selys	1887
<i>Lestes</i> 36		<i>Lestes dryas</i> Kirby	1890
<i>Lestes</i> E1	*	<i>Ortholestes clara</i> Calvert	1891
<i>Lestes</i> E2		<i>Ortholestes abbotti</i> Calvert	1893
<i>Lestes</i> 37		<i>Lestes obscura</i> Kirby	1894
<i>Lestes</i> F1	*	<i>Orolestes selysi</i> McLachlan	1895
<i>Lestes</i> C1		<i>Archilestes californica</i> McLachlan	1895
<i>Lestes</i> A3a		<i>Sympycna annulata gobica</i> Forster	1900
<i>Lestes</i> E3		<i>Ortholestes octomaculata</i> Martin	1902

nations for the species, shows at a glance the history of the development of our knowledge of the group. The species designations also are of such nature that when isolated they will carry much historical information with them: whether early or lately described, whether reposing now in early or lately proposed subdivisions of the group: under what name originally described. And the distribution of valid names and of synonyms among the subgenera is obvious at a glance. By adding a few conventional signs to the list I have sought to show that types may be indicated as well as at present by an asterisk, and synonyms by a sign of equality: and I might have used another sign to indicate that some species

down to the point where my annotated copy of Kirby's "Catalogue of the Odonata" ends.

(nos. 1-12 and 16-18) were described under another generic name (*Agriion*) older than *Lestes*.

It seems to me obvious that this system will provide a convenient means of handling an indefinite increase of our systematic knowledge in the future, while at once and forever putting an end to the multiplication of the names that every one must use within the group.

Let the principal systematic workers in a large group select the names to be retained in that group—say, as many of them as there are subfamilies in the group, and let these names be selected on the basis of fitness.⁴ The balance is automatic. Let the International Commission have the final word to say in case of differences of opinion as to names. Let the commission issue the lists as ready, and let each issue “spike the guns of priority.” If a mistake be made in the historical order of some entry, no matter: let the entry stand; add if you must for the few occasions when it will be of any consequence some conventional sign to indicate that the order has been violated in this case. Then we will have stability.

There are, among other things, three points to be guarded in considering the change like that here proposed. Will it sacrifice the past? Will it impede the future? Will it be too troublesome or too costly to initiate? With regard to the first of these I believe that the selection of the fittest generic names will do more than anything else can do to preserve our best traditions. Thus we may be able to put back on duty again such names as *Corethra*, *Chironomus*, *Amphioxus* and a host of others that have been cast aside as lightly as though they had never filled leading rôles in zoological classics.

The elimination of specific names is a different matter. When they are such pleasing and companionable names as *Lestes psyche*,

⁴Fitness, in my judgment, would consist in: First, familiarity through long usage. Why sacrifice the benefits that come from having brain paths well broken? Next, significance, euphony and brevity. Next, etymological correctness. Last and not least, priority when dissociated from usage.

L. io and *L. leda* of de Selys, I admit I shall miss them. But there are more of them I should be glad to miss, because they are barbarisms or misfits and give offense, or because they are overburdensome to carry. But good and bad, I consider their elimination from a standard list of the world fauna inevitable, simply because the cost of retaining them for use everywhere has become excessive.

Generic names now answer fully nine tenths of our needs. We do not often use specific names except in the groups in which we are specialists—saving, of course, in the case of the more familiar species among the higher vertebrates; and here we have common names which have become of late our chief reliance.

Others have expressed the opinion that the names of the future will be fiat.⁵ The application of the Dewey system of numbers to species was long ago proposed. I believe, however, that within normal endurance limits, names are better than numbers for designating things, quite aside from any traditional value they may possess: at least names are more natural to us. So, retaining a name for each group of such size as a biological layman may be supposed to need a name for, I have then proceeded to treat subgroups and species with designations that are in a small part fiat, and in a large part not so. Historical order is the essence of the method, and this is surely not fiat. And the designations proposed are not in fact so different from those to which we are by usage more accustomed. *E*, *F* and *G* appended to the old group name *Ephemera* would surely be more easy to handle than the three elongated numerals which Walsh left us for designating its subdivisions, *Pentagenia*, *Hexagenia* and *Heptagenia*. No one would think of protesting should I name three new species of any genus *quintus*, *sextus* and *septimus*.

These designations, although very brief, allow for the recording of every advance in systematic knowledge. Every new genus is retained and each species, forever recognizable by its specific designation, may be shifted

⁵See, for example, the article by Jonathan Dwight, Jr., in *SCIENCE*, N. S., 30, 527, for October 15, 1909.

about (by the use of the added letter) without losing identity.

How will this proposal affect future progress? It should lighten the "burden of nomenclature" for every one who is not born with unusual ability in dealing with names: it should facilitate the work of the morphologist, the ecologist, the physiologist, the comparative psychologist, the field naturalist and the layman. And while the demand for simplification of terminology has not arisen from among those who are most actively engaged in describing new forms, this proposal will interfere in no way with the work of the systematist. Let the grinding of new species go merrily on: it is desirable that the fauna of the whole world be made known. Let genera and species be described and named as now. Let them be named in anagrams or in dithyrambs. Let them bear the name of Mr. Wollingstone-Prendergast or of Satan: no matter: after the group name and serial number has been attached no one will be inconvenienced or offended. Let the splitter split and let the lumpers lump: each species once entered under its proper designation, under that designation it will ever remain: only the appended letter is changed by later shifting to another position in the group.

For the inauguration of such a system the machinery is already provided in the International Commission, and the preliminary work has already been done. Owing to the long search for priority the dates of names have been determined already with great conscientiousness throughout nearly the whole field of biology.⁶ It were better that zoological and botanical congresses should unite in this and that a complete standard name list for the fauna and flora of the world should be issued, giving the old names and their modern equivalents. Let additional designations be made (by the same commission: never by the de-

⁶ I was able with the aid of an annotated copy of Kirby's "Catalogue of the Odonata" to arrange a complete name list for the subfamily *Lestinae* in about an hour. With two copies and a pair of shears, I think it might have been done in fifteen minutes.

scribe, who merely names as now) in annual lists, such as are now announced in the *Zoological Record*. A few very recent species would thus have to be designated in the old way for a time. Let the international congresses in order to insure the success of the plan make one new rule: that new genera and species, to be valid must be issued in a publication which adopts and uses the standard list. Then we should have again a set of names fit for our general intellectual currency. No one who chose still to use all the subgeneric names would be restrained from so doing. Many in the present generation, inured to the long names, might prefer to go on using them all; but a new generation would regard them as we now regard the huge conchs and scraps of metal that were used for barter in primitive times.

JAMES G. NEEDHAM

THE NATIONAL CONSERVATION CONGRESS

THE program of the congress to be held at St. Paul next week includes the following addresses:

September 5—Morning: Addresses of welcome; an address by President Taft; "Our Public Land Laws," Senator Knute Nelson, of Minnesota. Afternoon: Conference of the governors of the states; addresses by governors.

September 6—Morning: Reports by the State Conservation Commissions; address, "National Efficiency," ex-President Roosevelt; appointment of committees. Afternoon: "Conservation—the Principle of the Red Cross," Miss Mabel Boardman, of Washington, president of the American Red Cross; "Safeguarding the Property of the People," Francis J. Heney, of California; "The Prevention of Power Monopoly," Herbert K. Smith, United States Commissioner of Corporations; "The Franchise as a Public Right," Herbert Hadley, Governor of Missouri; "Water as a Natural Resource," E. A. Fowler, of Phoenix, Ariz., president of the National Irrigation Congress; "The Development of Water Power in the Interest of the People," George C. Pardee, of Oakland, Cal.