tions and systematic qualitative analysis, with a few carefully chosen quantitative experiments afford the best background for the theoretical development of the science." They have, in order to avoid superficiality, cut the number of experiments down to a minimum, necessary for the understanding of the subject in its elementary phases. They have given more experiments than can be done in the normal year's work in school or college, hoping to stimulate the ambitious student to further work.

They have selected 33 typical experiments which includes the preparation of the common gases and acids and the preparation of several salts. This is followed by a study of the typical reactions of the metals and a course in qualitative analysis. The book also contains a few pages devoted to the quantitative proof of some of the fundamental laws upon which the science of chemistry is based. The material given is well selected and clearly stated, though, as the authors state in the preface, they have introduced little that is new. The question that each teacher must solve is whether it is better to cover a limited field thoroughly or to cover a broad field by selected examples. If a student's knowledge of chemistry is to be gained by one year's work this book could be used no doubt to advantage in connection with a text-book and a course of lectures; but if the subject is to be pursued further each one of the separate fields covered here would have to be gone over again in greater detail in order to attain a suitable ground for more advanced work.

J. E. G.

A Naturalist in the Bahamas. By John I. Northrop. October 12, 1861–June 25, 1891. A memorial volume edited with a biographical introduction by Henry Fairfield Osborn. New York, The Macmillan Co. $2.50.

The present volume brings together the papers of the late Dr. John I. Northrop, describing the zoological, botanical and geological results of his six months' collecting on the Bahama Islands. It includes also a narrative of the expedition contributed by Mrs. Northrop; a report upon the Bahaman crustaceans by Professor William H. Rankin; on the actinians, by Professor J. Playfair McMurrich; on the shells by Professor William H. Dall; on plants by Mrs. Northrop, Mr. Frank S. Collins and Dr. O. F. Cook; and a paper describing the new oriole *Icterus northropi,* by Dr. J. A. Allen. All of these papers are carefully republished and the volume forms altogether a substantial contribution to American zoological literature. . . . One closes the book with the feeling of keen regret that the life of Dr. Northrop could not have been spared. If his early promise brought together both from his own pen and from those of his associates the present results, what may not his years of maturity have contributed? He was another Lycidas and zoologists will remember him with such men as Harrington, Budgett and Balfour.

Bashford Dean

THREE FORMICID NAMES WHICH HAVE BEEN OVERLOOKED

Mr. S. A. Rohwer has kindly called my attention to two generic names which have been overlooked by all recent myrmecologists, including Dalla Torre, the author of the "Catalogus Hymenopterorum." One of these names is *Typhlomyrmex,* which was given by Gistel in 1856[1] to *Myrmica typhlops* Lund. On referring to Lund's paper[2] I find that *M. typhlops* is mentioned without a description, and since the insect is certainly not a *Myrmica* in the modern sense and can not be identified from the few notes on its habits (moving in files and carrying isopods), the name must be regarded as a *nomen nudum* and hence without any standing in nomenclature. And since Gistel cites no characters for his genus *Typhlomyrmex* but merely bases it on an invalid name, it, too, is without standing. Mayr, without knowing of Gistel's work, described in 1862 a genus *Typhlomyrmex* for a neotropical ant, *T. rogenhoferi*

[1] "Mysterien der europäischen Insectenwelt."

[2] "Lettre sur les Habitudes de Quelques Fourmis du Brésil, addressée a M. Audouin," *Ann. Sci. Nat.*, XXIII., 1831, p. 113–138.

Mayr. A few other species have since been added. It is clear that *Typhlomyrmex* Mayr is valid and not to be replaced by some other name on account of Gistel's *Typhlomyrmex,* which has not even the status of a synonym.

More serious is the second case which involves *Polyrhachis,* an important genus comprising some 300 known species of paleotropical ants. The name *Polyrhachis* was first suggested by Shuckard in a volume which he published with Swainson in 1840.[3] On page 172 of this work occurs the following sentence: "It is in the first division that we find the stingless genera, namely, *Formica* Linn., *Formicina* Shkd., *Polyergus* Latr., *Polyrhachis* Shkd. and *Dolichoderus* Lund, besides several other yet uncharacterized genera which we shall shortly publish." As Shuckard did not live to give a description of *Polyrhachis* and cites no species as belonging to it, the name is merely a *nomen nudum.* It was, however, either resuscitated or reinvented in 1858 by Frederick Smith.[4] He described some twenty species of *Polyrhachis,* with Drury's *Formica bihamata* as the designated type. In the same year 1858 Gerstäcker[5] based a genus *Hoplomyrmus* on an African ant, *H. schistaceus* Gerst., which is clearly congeneric with the forms included by Smith in *Polyrhachis.* As Emery has shown,[6] there is some doubt as to which generic name was first published. Since Smith's paper was read before the Linnean Society in June, 1857, while Gerstäcker's was not read before the Berlin Academy till April, 1858, the genus *Polyrhachis* has been given precedence by subsequent writers. Emery has, however, adopted *Hoplomyrmus* as a subgeneric name for a number of species which he groups together as the cohort "Polyrhachides carinatæ."

[3] "On the History and Natural Arrangement of Insects," London.

[4] "Catalogue of the Hymenopterous Insects Collected at Sarawak, Borneo; Mount Ophir, Malacca; and at Singapore by A. R. Wallace," *Journ. Proc. Linn. Soc. Zool.,* II., 1858, pp. 42–130, 2 pls.

[5] *Monatschr. Akad. Wiss. Berlin,* 1858, p. 262.

[6] "Saggio di un Catalogo Sistematico dei Generi Camponotus, Polyrhachis e Affini," *Mem. R. Accad. Sci. Ist. Bologna,* 1896, p. 776 *nota.*

Speculation on the validity of *Polyrhachis* and *Hoplomyrmus* loses all its significance in the light of Mr. Rohwer's discovery that Billberg in his "Enumeratio Insectorum" published in 1820, a work of which there seem to be only two copies in America, one in the Museum of Comparative Zoology, the other in the library of the Boston Society of Natural History, had many years previously established the genus under another name. In this work on p. 104 we find the following:

"G. MYRMA Eg.—Formica ol.
Carinata N. Chaled. Fbr. | Hystrix Eg. 2"
militaris Afr. Aequin. —

The "Eg." in this citation stands for "Billberg." It is clear that this author cites the two valid Fabrician species *Formica carinata* and *militaris* as representatives of a new genus *Myrma* for what was formerly a portion of the genus *Formica* Linn. Both of these species have long been regarded as *bonâ fide* members of the genus *Polyrhachis,* which, as has just been shown, was not established till 1858. The *hystrix* cited by Billberg is a *nomen nudum,* if it be not the *Formica hystrix* of Latreille and Fabricius, which is in turn a synonym of *Atta* (*Acromyrmex*) *octospinosa* Reich. The "Eg." after the name would seem to preclude this latter supposition. Be this as it may, however, there can be no doubt concerning the two other species, one of which, *F. militaris,* may properly be regarded as the type of the genus *Myrma.* This case seems, therefore, to be quite clear and to require, in obedience to our code of zoological nomenclature, the substitution of *Myrma* for *Polyrhachis.* Although this is a deplorable change, owing to the large number of citations of ants under Smith's generic name, there is, nevertheless, a slight gain in brevity and euphony. I would suggest, however, that *Polyrhachis* Smith be retained as a subgeneric name for the type *P. bihamata* Drury and the small cohort of allied species (*bellicosa* F. Smith, *ypsilon* Emery, *craddocki* Bingham and *lamellidens* F. Smith) which Emery calls Polyrhachides hamatæ. The typical subgenus *Myrma* will replace *Hoplomyrmus,*

since its type, *M. militaris,* is closely related to Gerstäcker's *schistacea.*[7] The species of *Myrma* may then be grouped under several subgenera, names for two of which are here suggested for the first time, as follows:

Genus Myrma Billberg (1820) = *Polyrhachis* F. Smith (1858).

1. Subgenus: *Campomyrma* subgen. nov.
   = Cohors Polyrhachides camponotiformes Emery.
   Type: *Polyrhachis clypeata* Mayr.
2. Subgenus: *Myrma* Billberg = *Hoplomyrmus* Gerst.
   = Cohors Polyrhachides carinatæ Emery.
   Type: *Formica militaris* Fabr.
3. Subgenus: *Polyrhachis* F. Smith.
   = Cohors Polyrhachides hamatæ Emery.
   Type: *Formica bihamata* Drury.
4. Subgenus: *Hagiomyrma* subgen. nov.
   = Cohors Polyrhachides arciferæ Emery.
   Type: *Formica ammon* Fabr.
5. Subgenus: *Hemioptica* Roger.
   Type: *Hemioptica scissa* Roger.

A third generic name, *Formicina* Shkd., which has been overlooked, is mentioned in the foregoing citation from the work of Swainson and Shuckard. This citation and the context seem to show that Shuckard accepted *Formica* Linn. in a restricted sense as the equivalent of what we now know as *Camponotus* Mayr., probably with the type *Formica herculeana* Linn., but this is open to doubt since no species is cited. On the same page two well-known ants are mentioned as species of *Formicina,* viz., *F. rufa* Linn. and *F. flava* Fabr. If only the former species had been mentioned, we might have been compelled to change our modern genus *Formica* to *Formicina,* but as Shuckard included also *F. flava* (which is at present *Lasius flavus*) in the same genus, we see that *Formicina* is merely a synonym of *Formica* as used by Fabricius and his contemporaries, possibly *minus* the group now known as *Camponotus.* Under the circumstances I can see no reason to replace any of the modern subdivisions of the old Linnean genus *Formica* with *Formicina* Shuckard.

W. M. Wheeler

[7] According to Emery *schistacea* is merely a subspecies of *militaris.*

ON MUSCOID AND ESPECIALLY TACHINID SYNONYMY

The time seems ripe for a few remarks on this subject. There exists in the superfamily Muscoidea an immense taxonomic field awaiting exploitation, and it is to be hoped that it will attract many able workers imbued with a proper sense of responsibility, for it is at the same time a biologic field of first importance and magnitude as regards arthropod and general invertebrate evolution. Only one caution is necessary to those who would enter this field, as well as to those already in it—and this applies as well to all workers in whatever field—which is to do one's work so thoroughly as to secure absolute finality before drawing positive conclusions. In other words, do not make an unqualified statement before going to the bottom of the matter in hand. Results secured during the past three years have demonstrated conclusively that finality in the taxonomy, and consequently in the synonymy, can not be secured in this superfamily by the off-hand comparison, or even by the most careful study, of external adult characters alone.

Mr. D. W. Coquillett, in his "Revision of the Tachinidæ of America north of Mexico,"[1] without the knowledge just mentioned and thus without any true conception of the great difficulties before him, moreover without a good eye for external characters and with little appreciation of their importance, but nevertheless with the best of intentions, attempted to group these flies comprehensively and indicated extensive but often incorrect synonymy, lumping even distinct genera under one species in the most uncouth but seemingly plausible manner. We can not but admire the industry and ingenuity which have contributed to produce this work, while we deplore its great lack of quality. Dr. J. M. Aldrich, in his "Catalogue of the North American Diptera,"[2] also without the above knowledge but with a somewhat better eye for external characters, though following Mr. Coquillett quite faithfully in the main, has resurrected a few

[1] Techn. Ser. Bull. No. 7, Div. Ent., U. S. Dept. Agr., 1897.

[2] "Smiths. Misc. Colls.," No. 1444, 1905.