ture, published in 1886. The latter code has been already adopted, not only by ornithologists, but also by leading mammalogists, paleontologists, herpetologists and ichthyologists, and its essential features have been accepted by many prominent entomologists and other writers on invertebrates. It is a matter for special congratulation, therefore, that the botanists have 'fallen into line' so that, for the first time, the naturalists of a great continent are in substantial accord on the main points involved in the nomenclature of genera and species. Better still, the agreement is by no means confined to America, for many of the more progressive naturalists of the Old World have already accepted the same guiding principles.

These principles, as applied in the work under consideration, may be briefly stated as follows: (1) Priority of publication the fundamental principle of nomenclature; (2) Botanical nomenclature to begin with 1753, the date of the first edition of Linnæus's *Species Plantarum;* (3) Original specific name to be retained without regard to generic name; (4) A name once a synonym always a synonym; (5) Original name retained 'whether published as species, subspecies or variety'; (6) Varieties [subspecies] written as trinomials; (7) Double citation of authorities.

The well printed volume is not wholly above criticism. One is surprised to find that the original spelling of generic names has been violated—as *Buettneria* for *Butneria* (p. 163), *Gleditschia* for *Gledetsia* (p. 192), and so on. The retention of capitals in certain specific names is also to be regretted. A word of explanation respecting the synonymy, and also a more explicit statement as to the exact scope of the 'List', would have been acceptable. But these matters are trivial compared with the obvious merits of the work.

C. Hart Merriam.

SCIENTIFIC LITERATURE.

CAN AN ORGANISM WITHOUT A MOTHER BE BORN FROM AN EGG?

1. *Ein geschlechtliche erzeugter Organismus ohne mütterliche Eigenschaften.*—Boveri.—Berichte d. Gesellsch. f. Morph. u. Phys. zu München, 1889.
2. *Giebt es geschlechtliche erzeugte Organismen ohne mütterliche Eigenschaften.*—Seeliger.—Arch. f. Entwickelungsmechanic, I., 2, 1894.

In 1889 Boveri gave an account of certain experiments which seemed to him to prove that a denucleated fragment of the egg of one species of sea-urchin may be fertilized by a spermetazoon from another species, and that it develops into a larva with none of the characteristics of the species which supplied the egg, but exactly like, though smaller than, the normal larvæ of the species which supplied the spermetazoon. He believes that his experiments demonstrate the law that the nucleus alone is the bearer of hereditary qualities; that with the removal of the maternal nucleus are removed at the same time the maternal hereditary tendencies of the egg, and that while the maternal protoplasm furnishes a large share of the material for the production of the new organism, it is without influence on the form of this organism.

This paper was welcomed with great enthusiasm as a contribution of the utmost value to the solution of the problem of inheritance, although careful study of it, or of the translation which was published in the *American Naturalist* for March, 1893, will show that Boveri's evidence for his belief is not direct but very circumstantial.

Seeliger has repeated Boveri's experiments with great care, and on a much more extensive scale, and he shows that the indirect evidence, upon which Boveri bases his belief that the larvæ in question were born

from denucleated eggs or fragments of eggs, is fallacious. Seeliger also brings forward positive or direct evidence to show that Boveri's generalization is an error.

W. K. B.

The Rise and Development of Organic Chemistry, by CARL SCHORLEMMER, LL. D., F. R. S., revised and edited by ARTHUR SMITHELLS, B. Sc., Prof. Chemistry in Yorkshire College, Leeds, Victoria Univ. Macmillan & Co., New York. Pp. 280. Price $1.60.

The first edition of the late Professor Schorlemmer's history of organic chemistry made its appearance in 1879. Until the publication of the present volume no revision appeared, although a German edition, carefully edited, was printed in 1889. It was while Schorlemmer was engaged in the preparation of this second English edition that death overtook him, and his unfinished task fell into the hands of Professor Smithells, who has ably completed it.

A brief but exceedingly interesting biographical sketch of Schorlemmer precedes the real subject-matter of the book. From this we gather that the researches which made the author famous were first begun in 1861, as a result of the study of oils obtained from cannel coal. From them were isolated the aliphatic hydrocarbons. A large field was opened up in this study of the paraffins, and Schorlemmer's results were of great importance in the development of organic chemistry.

In the first chapter considerable space is devoted to the discussion of the origin of the word chemistry; attention is directed to the earliest attempts at classification; the labors of Lemery, Stahl, Scheele, Lavoisier, Berzelius and Gmelin are fully reviewed, while a concise account of the *aetherin* theory closes the chapter.

In the second chapter attention is given to Berzelius' attempt to emphasize the difference between organic and inorganic bodies as pointed out by Gmelin; the synthesis of urea by Wöhler, which created such a high degree of excitement in the chemical world; and the beginnings of the controversy which was waged between Dumas, Liebig and Berzelius. The presentation of the substitution theory and the attacks to which it in turn was subjected are fully and clearly narrated.

From time to time the story is interrupted. Thus, in the fifth chapter, the author brings together the various definitions of organic chemistry. The early definition of Liebig, viz.: that organic chemistry is the chemistry of the compound radicals, was shown to be inadequate through the efforts of Williamson and Odling, who demonstrated the existence of the same in inorganic compounds. As carbon was recognized as the element common to all organic bodies organic chemistry might, even in the early days, have been defined as the chemistry of the carbon compounds, or of radicals containing carbon, had it not been that compounds like carbon monoxide, phosgene, carbon disulphide and the carbon chlorides were not produced in the organism. In 1848 Gmelin, believing that he had found a boundary line, wrote, 'hence *organic compounds* are all *primary compounds* containing more than one atom of carbon.' This definition no longer sufficed after the chemical world accepted Gerhardt's atomic weights. In 1851 Kekulè, recognizing the difficulties in the way of a simple, satifactory definition, recorded himself in these words, "organic chemistry is the chemistry of the carbon compounds." He held it to be a special part of *pure* chemistry, but because of the great number and importance of the carbon compounds believed that it should be separately treated. Erlenmeyer wrote "their study requires in many respects peculiar methods of investigation, different from those employed in the study of the compounds of other elements, and thus the

necessity for a division of labor has also made itself apparent in the interest of scientific research." Butlerow gave as his opinion that organic chemistry must be defined as the chemistry of the carbon compounds. After giving place to the definitions of the earlier writers Schorlemmer defines 'organic chemistry as the chemistry of the hydrocarbons and their derivatives.' He, however, recognized that it did not place a sharp boundary line between the inorganic and organic fields.

In the remaining chapters the further development of the organic field is traced with great care. The different views in regard to the constitution of benzene, the arrangement of atoms in space, geometrical isomerism, various striking syntheses in both the paraffin and aromatic series are clearly presented. In regard to the great revolution produced in calico-printing and in the manufacture of madder preparations by the synthesis of alizarin by Graebe and Liebermann, Schorlemmer writes "madder finds to-day only a very limited application in dyeing of wool. Twenty years ago the annual yield of madder was about 500,000 tons . . . . . when a friend of the author asked to see the madder plantations at Avignon he was told 'it is no longer grown, as it is now made by machinery.'"

The book closes with a chapter upon the unsolved problems. "If to-day we cannot make morphine, quinine, and similar bodies artificially, the time is near at hand . . . . If we cannot make quinine we have already found a partial substitute in antipyrine." Yes, in the language of Schorlemmer "organic chemistry advances with giants' steps. About fifty years ago only twelve hydrocarbons were known, and twelve years ago this number had increased to about 200. To-day we are acquainted with more than 400, and many of them, as well as their derivatives, have been carefully studied."

The little volume from which we have quoted is well constructed and replete with information for the student of chemistry. Its careful study will be well repaid. The editor and publishers deserve much credit for again presenting such a valuable work.

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NOTES AND NEWS.

Milk in its Relations to Diphtheria.

Vladimirow, in the Second Part, Vol. III., of the *Archives des Sciences Biologiques publiées par L'Institut Impérial de médecine Expérimentale*, St. Petersburg, page 84, gives the results of some researches made by him in Nencki's laboratory on the effects of the diphtheria bacillus upon cows, and especially as to the possibility of producing in the cow, by subcutaneous injections of this organism, a disease which would result in the infection of the milk by the same organism, so that such milk might become a carrier of the germs to those who used it.

Dr. Klein, of London, has reported, as the result of such hypodermic injections, the production of an eruption upon the udder of the cow, in which eruption the diphtheria bacillus was found to exist.

These experiments were repeated by Dr. Abbott, of Philadelphia; but while he found that the injection produces disease, and even death, in the cow, there was no eruption in the udders, and no diphtheria bacillus in the milk. Vladimirow confirms the results obtained by Dr. Abbott. He found that if the diphtheria bacillus was introduced into the milk ducts of the teats upon one side of the udder of the cow, an inflammation was produced upon that side of the udder, and general fever occurred, which, in one case, produced death. The milk secreted by the injected half of the gland acquired a greenish tint, coagulated, contained pus, had an alkaline reaction, and contained less sugar and more albuminoids than the milk coming from the sound side of the gland. The di-