sented facts to the various sections, while the older men gave a larger share of their attention to the analysis of facts accumulated by others, combining results from various sources for the bracing or demolishing of hypotheses. It may be claimed that the right to speculate has been earned by the professors through years of hard work, and it is true that judgment comes with years. But the question occurs to me whether what may after all be a rarer kind of ability is not unduly discriminated against by the custom of demanding of all candidates for higher degrees in science "contributions" that are essentially accumulations of new data. Do we not need to recognize that there are at least possible "contributions" of value for the advancement of science that do not consist chiefly of new facts?

Benj. C. Gruenberg
DeWitt Clinton High School,
New York
January 1, 1910

WHY PAWLOW?

To the Editor of Science: In the interesting address of Professor Howell's published in Science of January 21, 1910, I note a reference to the work of "Pawlow" on enterokinase. Perhaps it is too late in the day to protest against this spelling, but it seems to the writer that even should our physiologists concede their science to be "made in Germany," certainly our language is not. There are certain obvious rules for the transliteration of Russian names that have been in effect since such transliteration began to be done. But of late there appears to be a tendency to ape the Germans in this regard. Vladivostok now masquerades on many maps as Wladivostok. But if Pawlow, why not "Saratow," or "Orlow" or "Trepow" or "Popow"? Even *Minerva* which no one ever accused of being un-Teutonic in its make-up, uses the spelling Pavlov throughout. What reader of contemporary history would recognize the name of the famous Russian diplomat, Pavloff, if he read that one Pawlow was some time minister to Korea? Surely our orthography is bewildering enough as it stands without wantonly importing foreign absurdities into it.

J. F. Abbott

THE NORWOOD "METEORITE"

To the Editor of Science: Professor Very in his second article on the Norwood "meteorite" (Science, March 18, 1910, pp. 415–418) states that I helped him identify some of the minerals in thin section. I did identify the minerals, but, as is apparent to any petrographer, I am in no way guilty of the extinction angles recorded by Professor Very, or of the novel method of determining the composition of the feldspar. The feldspar is labradorite, but I did not attempt to find its exact composition.

G. F. Loughlin

SCIENTIFIC BOOKS

Die Bienen Afrikas nach dem Stande unserer heutigen Kenntnisse. Von Dr. H. Friese. Zoologische und Anthropologische Ergebnisse einer Forschungsreise im westlichen und zentralen Südafrika ausgeführt in den Jahren 1903–1905, mit Unterstützung der Kgl. Preuss. Akad. d. Wiss. zu Berlin von Dr. Leonhard Schultze. 2 Bd. 475 pp., 2 pll., 19 charts and 1 text. fig. Jena, Gustav Fischer. 1909.

In this monograph the noted melittologist, Dr. H. Friese, has brought together practically all that is known concerning the Ethiopian apifauna. The region covered is Africa south of a line drawn from Senegal to Abyssinia. In all, 777 species of bees are enumerated from this vast area. Fifty-three of these are described for the first time, and of the remainder the original descriptions are reproduced. The introductory portion of the work will interest the student of geographical distribution, since it contains a number of maps showing the ranges of some of the more characteristic genera of bees, both in Africa and in other parts of the world. The bees of Madagascar are not considered, because they are mostly of peculiar genera and have been adequately described by H. de Saussure in his

contribution to Grandidier's great work on the fauna and natural resources of that island. The numbers given by Friese for the apifauna of various countries are worthy of note. Germany is credited with 440 species, Hungary with 510, Tyrol with 380, Great Britain with 200, Sweden with 212, Algiers with 413. The number of described species for the world is estimated at 8,000, of which 2,000 belong to Europe alone. Thus it will be seen that the Ethiopian region, though it may actually possess as many as 1,000 to 1,200 species, according to Friese's estimate, has a much poorer apifauna than Europe. This bears out the author's statement that bees are not really tropical insects, but have their optimum area of speciation in the north temperate zone. An examination of the Ethiopian bees shows, moreover, that a very large proportion of the genera and species must have come originally from the palearctic region, the southernmost portion of which is formed by the Mediterranean and part of the Red Sea littoral of Africa. According to Friese, the Ethiopian region has received its palearctic component by immigration "from Egypt, which is purely palearctic, like Algiers and Tunis, over Sudan-Abyssinia to the Kilimandjaro and Meru, where we still find on the mountains at altitudes of 2,500 to 3,000 m. some purely European forms of *Halictus* and a species of *Andrena* (*A. africana*) which is very similar to *A. helvola* of Central Europe." There is a possibility that a similar immigration has taken place from the Mediterranean littoral into the Congo basin along the west coast of the continent.

The palearctic origin of the great bulk of the Ethiopian apifauna is furthermore attested by the fact that though it comprises many cosmopolitan and European genera such as *Xylocopa, Nomia, Anthophora* and *Megachile,* often represented by species that have a striking African facies, it nevertheless contains very few genera that occur nowhere else. As such endemic genera Friese cites *Polyglossa, Patellapis, Fidelia, Meliturgula* and *Eucondylops,* each of which seems to have a very restricted range. *Meliturgula* stands between the genera *Panurgus* and *Meliturga; Polyglossa* and *Patellapis* are primitive forms, the former belonging to the Colletine, the latter to the Halictine subfamily. *Fidelia* is a genus unlike any hitherto described in that it presents a singular mixture of Gastrilegid and Podilegid characters. *Eucondylops* is based on a parasitic species (*E. konowi*) which Dr. Hans Brauns discovered in the nests of the remarkable bees of the genus *Allodape.* This latter genus ranges over the Indo-Malayan region, Sunda Archipelago, New Guinea and a limited portion of eastern Australia, but it is represented by the greatest number of species and individuals in the southern half of Africa, which is therefore to be regarded as its true home. Brauns, as quoted by Friese, found that the species of *Allodape* "do not make cells and provision them like other solitary bees with food for the individual larvæ, but that the eggs and larvæ in all stages of development, the pupæ and callow bees are all found together simultaneously in the same cavity of a hollow twig, which may attain a length of 12 cm. The larvæ, which are unique among bees in having extraordinary foot-like appendages, with which they hold the food that is given them, are fed till they mature." These bees are, therefore, truly social and breed and fly throughout the year along the warm coast of Cape Colony. It is interesting to note that the parasitic *Eucondylops* is very similar to its host *Allodape,* so that it is to be regarded as having been derived from this genus. This kind of phyletic relationship has been noted between many other parasitic bees and their hosts, and we are now coming to believe that many parasitic ant genera are also derived from the genera of their hosts.

Friese shows that the Ethiopian apifauna is very rich in certain genera, which are not so well represented in many other parts of the world. Thus he records 162 species of *Megachile* and 61 species of *Xylocopa.* Other widely distributed genera, however, like *Andrena* and *Osmia,* are very poorly represented.

The social bees of the Ethiopian region comprise 29 species of *Trigona,* the honey bee and four of its subspecies and varieties (*Apis mellifica, A. unicolor-adansoni, unicolor-in-*

termissa, unicolor-friesei and the typical *unicolor*). The bumble-bees (*Bombus*) are absent from the Ethiopian region, though they are known to occur in tropical South America.

W. M. Wheeler

Quantitative Chemical Analysis, Adapted for use in the laboratories of colleges and schools. By Frank Clowes, D.Sc. (London) and J. Bernard Coleman, A.R.C.Sc. (Dublin). Eighth edition. Philadelphia, P. Blakiston's Son & Co. 1909. Pp. 565. $3.50.

This is a new edition of a well-known and very popular book. The first edition appeared in 1891, the seventh in 1905. This was reprinted in 1907 and again in 1908, and here is a new edition. What is the reason for this popularity? We find it on comparing this with other manuals, which are as a rule either general or special, those of the general type giving few special or technical methods, and those of the special type dealing with a single branch of analysis. In the present book the authors begin with very thorough instruction in general analysis and pass on to specialties, such as the analysis of gas, water, milk, butter, tanning materials, oils and fats, assaying, iron and steel, etc.

This comprehensive task is well done in this edition in 565 closely printed pages, by omitting matters theoretical, and thus gaining space. The directions for work are so clear and comprehensive that an isolated analyst should be able to overcome any difficulties with its help. For example, 10 pages are given to a thoroughly illustrated, very detailed but empirical treatment of the subject of the balance and weighing. Treadwell in his analytical chemistry gives also 10 pages to the subject, but half this space is given to mathematics and theory.

In brief the present volume will appeal less to the university-trained chemist, who has access to a library of books on analysis, than to the great number of analysts with only college or technical school training who need a well-written comprehensive book, which simply tells them what to do and how to do it.

Among the new methods described in the preface may be mentioned additional methods for the determination of melting and boiling points, for the electrolytic estimation of metals, for the volumetric estimation of hydrogen peroxide, formaldehyde, silver, tin and antimony in alloys and various new technical processes including the use of the bomb-calorimeter in coal valuation, and a new section on oils, fats and waxes to which Professor Lewkowitch has contributed.

E. Renouf

Elementary Chemistry. By Hollis Godfrey, Head of the Department of Science, Girls' High School of Practical Arts, Boston, Mass. Longmans, Green & Co. 1909. Pp. 456.

In the preface the author states that,

> Four ideals have governed the writing of this book. The author has desired to obtain simplicity; to reach the understanding of the student; to rouse the pupil to a realization that the science of daily life is identical with the science of the school room; to include all the essential facts and theories which could be rightly assimilated in one year's work in elementary chemistry. . . . No book which is a mere encyclopedia of facts arranged without reference to their teaching value can produce a maximum of effect. . . . It has been a constant purpose to bring forward wide-reaching general truths in the form in which they would most effectively impress the student.

In this book the author has followed a different path from the usual one and has produced a work which has much to commend it for the purpose for which it is evidently intended. Instead of confining himself to a rather detailed study of a few of the simple substances and preparing the way for a more advanced course, the author has had in mind the needs of those who will have no further opportunity to study this subject and has covered in a very general way the more important points in the fields of both inorganic and organic chemistry, emphasizing especially the application of this science to daily household life. Owing to the fact that this book would probably be used by students more advanced than those who would take an elementary