three or four primary divisions, the latter having many rays 6″ to 15″ long, forming umbels; the short rays bearing single flowers, the long ones umbelets of many (ten to thirty) flowers each; the umbelets on each plant varying in number from five to seventy. Near Lambertville, New Jersey.

AUSTIN G. APGAR, Trenton, N. J.

A Point in Nomenclature.

There can be no question that the specific name to be borne by our species of *Cliftonia* is that given to it originally by Gærtner, namely, *Cliftonia nitida*. Its synonymy in brief is as follows:

Cliftonia nitida, Gærtn., fil., Fruct., iii., 247, t. 225, fig. 5 (1805).

Ptelea monophylla, Lam., Ill., i., 336 (1791). This long remained a puzzle, though correctly solved by Nuttall (Gen., i., 104). Jussieu (Mem. Rut., 127) suspected it to be a species of *Rumex*.

Milocaryum ligustrinum, Willd., Enum., 454 (1807).

"*Waltheria Caroliniensis*, Fras., Cat."

Cliftonia ligustrina, Spreng., Syst., 2, 316 (1825).

SERENO WATSON.

Index to Recent American Botanical Literature.

Botanical Estrays.—T. H. McBride. (Amer. Nat., xxi., pp. 572–573.)

Mr. McBride records the discovery of two species of *Lycopodium* at Iowa City; none have hitherto been reported from the State.

Carices of Pennsylvania—A List of the. (Proc. Acad. Nat. Sci., Phila., 1887, pp. 68-80; advance sheets. Also reprinted, pamph., 8vo., pp. 12.)

Professor Porter enumerates 98 species and 24 varieties of *Carex*, an unexpectedly large number for a single State. We doubt if New York has as many, and the number exceeds those detected in New Jersey by at least fifteen. Full localities are given by counties. Pennsylvania is the southern limit of several species, among them *C. pauciflora*, Lightf., *C. retrorsa*, Schweinitz, *C. vulgaris*, Fries, *C. Magellanica*, Lam., *C. arctata*, Boott., and *C. chordorhiza*, Ehrh., while it is the most northern habitat of *C. Shortiana*, Dewey. Prof. Porter contends for the specific rank of his *C. Smithii*, and describes the following new varieties: *C. granularis*, Muhl., var. *Haleana*, *C. tetanica*, Schk. vars. *Canbyi* and *Carteri*.

Cercis.—C. G. Lloyd. (Drugs and Medicines, N. A., ii., pp. 122–125; six figures.)

Claims of Botany.—W. W. Bailey. (Education, vii., 704-713.)

We are pleased to note in these arguments some points which the teachers of this metropolis will heartily substantiate. We fear that "*text-book instruction*" is yet entirely too prevalent, and many are the teachers who know not the common plants around them. There is still too much striving after words and definitions, statements and compositions, no matter how they are arrived at, and plants as objects to look at and to watch and think about are not so important as they are to make up into lessons. Drawing is not sufficiently used as an accessory and test, and children are more familiar with the conventionalized forms of their portfolios than with the natural objects. Not only is there an increasing demand for teachers, but governesses, companions and superior nurses with the knowledge sufficient to answer the questions of children are wanted and cannot be had.

Contributions to American Botany, XIV.—Sereno Watson. (Proc. Amer. Acad. Arts and Sci., xxii., pp. 396–481; reprinted.)

The first seventy pages of Dr. Watson's latest "contribution" are devoted to an enumeration of the plants collected by Dr. Edward Palmer, in the State of Jalisco, Mexico, in 1886, at and about the city of Guadalajara. The collection includes 675 species, over ten per cent. of which are new. *Corythea* is a new genus of Euphorbiaceæ and *Prochnyanthes* a new genus of Agaveæ. The determinations of Gamopetalæ are by Dr. Gray, and among them we find a new genus of Asclepiadeæ, *Mellichampia.* Dr. Vasey finds several new species of Gramineæ, and *Acrostichum araneosum*, *Notholæna aurantiaca* and *Cheilanthes Palmeri* are new ferns by Professor Eaton.

The second part gives descriptions of new species of plants from various North and Central American localities. Those from the United States are as follows: *Cardamine Lyallii; Arabis confinis*, which includes all the eastern plants referred to *A. Drummondii; A. Bolanderi, A. perennans, A. Beckwithii, A. Lemmonii, A. Parishii*, and *A. pulchella*, M. E. Jones, all western; *Thelypodium stenopetalum*, *Silene longistylis*, Engelm.; *Lupinus Cusickii* and *L. Schockleyi; Astragalus Hendersoni, A. accidens*

and *A. lectulus; Orogenia fusiformis; Peucedanum circumdatum* and *P. Kingii* (the latter=*P. graveolens*, Wats.); *Podistera* is a new genus of Umbelliferæ, with a single species, *P. Nevadensis*, *Microseris anomala*, from Santa Cruz Island; *Camassia Cusickii; Erythronium Hendersoni*, *E. citrinum* and *E. Howellii*, all from Oregon; *Juncus Congdonii*, from Merced Co., Cal.

N. L. B.

"*Crazy*" *Pollen of the Bell-wort.*—Byron D. Halsted. (Bot. Gazette, xii., pp. 139, 140, one plate; also reprinted.)

Description and illustration of very curious forms of pollen tubes of *Uvularia grandiflora* grown on culture slides.

Diphylleia cymosa.—C. G. Lloyd. (Drugs and Medicines N. A., ii., pp. 120, 121.)

Elements of Botany; including Organography, Vegetable Histology, Physiology, Taxonomy, and a Glossary of *Botanical Terms.*—Edson S. Bastin. (8vo, pp. 282, 459 figures; Chicago, 1887.)

Professor Bastin has written a very useful book, and one for which we predict a large sale. It is not a reference work in any sense, but a simple, straightforward presentation of the subject, which will prove of the highest value to beginners and may be used advantageously by more advanced students. Its arrangement and methods are indeed remarkably well adapted to an ordinary undergraduate course of study.

Organography is first taken up, and followed by Histology. It seems to us more advantageous to reverse this arrangement, though it is a good deal a matter of taste and depends upon the opinion of the instructor.

The systematic portion of the book is contained in the last fifty-four pages, and is a very concise treatment of the topic. We note a few points in which we can hardly agree: thus Yeast is included in Schizomycetes—microbes may better retain that name to themselves alone; the treatment of the Thallophytes is far simpler under the natural classes Algæ, Fungi and Lichens as primary subdivisions, than under the method of spore formation and sporocarps, which throws most unlike organisms together, but botanists appear to have gone mad on this system of late, in spite of its intricacy and unnaturalness; Sphagna are considered

as a mere genus of mosses, but may better be taken as a distinct class; in the treatment of Pteridophyta no mention is made of the two well-marked series of Homosporæ and Heterosporæ, and on page 236 the word Filicinæ is misspelled so as to remind one strongly of Catnip.

The illustrations are generally good, though some of them will not bear close examination. They have one very great recommendation—they are all new, the borrowing photo-engraving process not having been invoked in the preparation of this text book!

Erechtites hieracifolia.—C. G. Lloyd. (Drugs and Medicines N. A., ii., pp, 126 et seq., one plate and illustrations.)

Fresh-water Algæ of the United States.—Francis Wolle. 2 vols., 8vo., 157 plates; price $10.

This work, which has long been looked for with interest, is now completed and ready for issue. It supplies a long-felt want, for Wood's Contribution, the latest American work on this subject, was published about fifteen years ago, and described all the then known Algæ—only about 375 species. Mr. Wolle's new work embraces 13,000—all the species of this country known up to the present time. The first volume contains the text, and the second the plates. These are all colored by hand and contain over 2,000 figures. The volumes correspond in size, press work and plates with the author's "Desmids of the United States," to which the work is complemental. The price may seem high, but remembering the number of plates and the comparatively small demand for a work of the kind, hence the necessarily small edition, it is really very low, low even as compared with a recent work on British Fresh-water Algæ, which sells for $22.00.

Guatemala.—Undescribed Plants from.—I. J. Donnell Smith, (Bot. Gazette, xii., pp. 131–134.)

This is the first installment of descriptions of new species and varieties of plants from the collections of Mr. H. von Türckheim, a resident botanist of Coban. *Vochysia Guatemalensis, Hamelia calycosa, Ardisia pectinata, Myriocarpa heterospicata, Nephrodium Tuerckheimii, and N. Fendleri,* Hook., var. *paucipinnatum* are described.

Life History of the Diatomaceæ—A Contribution to the.—H. L.

Smith, Hon. F. R. M. S. (Proc. American Society of Microscopists, 1886, pp. 30 66; five plates, colored.)

Prof. Smith is well known as a life-long student of the Diatomaceæ, also as the distinguished author of the system of classification now so generally adopted, hence his conclusions carry with them the weight of acknowledged authority. The paper is too long to give a synopsis of, but the subject is treated under the following heads: I. *The Structure of the Diatom Frustule, the Nature of the Envelope and the Typical Variations.* II. *Distribution and Arrangement of the Internal Contents.*

In summing up the first part, he says: "It appears that for all diatoms there is a general type of structure, that the departure from the normal form is regular and often quite gradual, and it is to be regretted that minute considerations, such as varied outline, difference in size, finer striation, abnormal forms and the like, have sufficed so often for proposing new species, to say nothing about genera; whereas, looking at the subject from a more rational standpoint, and guided by safer principles of philosophizing, one may well be assured that nearly half the present admitted genera, and many more of the species, might be blotted out with advantage." C. H. K.

Lima Beans in Germination—Experiments with.—W. J. Beal. (Amer. Nat., xxi., pp. 576,577; one plate.)

Lindera Benzoin.—C. G. Lloyd. (Drugs and Medicines N. A., ii., pp. 117–119.)

List of Native and Introduced Plants observed in Flower in the Vicinity of Salem during the Spring of 1886, *on or before May* 1*st.*—J. H. Sears. (Bull. Essex. Inst., xviii., pp. 95–98.) A list of about 150 species with common names.

List of Recently Identified Fossil Plants belonging to the United States National Museum, with Descriptions of several new Species.—Leo Lesquereux. (Proc. U. S. Nat. Mus., 1887, pp. 21–46; four plates.)

An enumeration of 203 species, of which the following are new: *Pecopteris Powellii, Cycadeo-spermum æquilaterale, C. faboideum, C. subfalcatum, Caulinites Beckeri, Irites Alaskana, Quercus Crossii, Andromeda linearifolia, Vaccinium Coloradoense,*

Cratægus Holmesii, Cissites microphyllus, Grewiopsis acuminata, Phyllites fraxineus and *P. mimusopsoideus.*

Lobelia.—C G. Lloyd. (Drugs and Medicines N. A., ii., pp. 101-106; one plate.)

Descriptions are given of structure, history and medical properties of *L. syphilitica* and *L. cardinalis.*

Milkweeds.—Joseph F. James. (Amer. Nat., xxi., pp. 605-615; nine figures.)

A popular account of the structure of the flowers, the pollination and economic relations of the Asclepiadeæ.

Movement of Diatoms.—Cornelius Onderdonk. (The Microscope, May, 1887.)

Although several theories have been proposed to account for the movement of diatoms, none have proved so satisfactory as to be generally accepted. This paper will be read with interest by those who have made the matter a subject of thought. Mr. Onderdonk's theory is, briefly, as follows:—That living protoplasm is matter in rhythmic motion and dead protoplasm is matter at rest; that all living diatoms are encased in an envelope of protoplasm, and that it is the rhythmic action of this that causes the motion of the frustules. He calls attention to the fact that the force exerted is immediately *on the surface* of the diatom; that this force is exerted *over the surface* from end to end of the diatom, and that the force is *rhythmic.* He considers this rhythmic motion to be akin to the cyclosis which takes place in the interior of a cell. C. H. K.

Nitrogenous Bodies in Plants—The Occurrence and Functions of Certain.—W. E. Stone. (Bot. Gazette, xii., pp. 123-130.)

An interesting account of present knowledge of this subject.

Origin of the Tomato from a Morphological Standpoint.—L. H. Bailey, Jr. (Amer. Nat., xii., pp, 573-576; one plate.)

Reasoning from the results of an exhaustive study of twenty-five varieties of cultivated Tomatoes, Professor Bailey concludes that the "Cherry Tomato," *Lycopersicum cerasiforme*, Dunal, is the original type from which all the others have been derived.

Primer of Botany.—Mrs. A. A. Knight, Robinson Seminary, Exeter, Mass. (Ginn & Co., Boston, 1887.)

The object of this little book is to present the essential points

of plant histology and physiology with a little morphology in the simplest objective form to children of primary grades having no knowledge of the subject. The use of the microscope is expected from the teacher at the start, and yet the questions and statements, and even the methods, are so ambiguous that we doubt the ability of the average teacher to use this primer intelligently.

Lesson A. begins with "What the living part of a plant is," and the first page alone is the veriest mixture of the simple and the complex, as these two sentences will show: "State something about a lily." "What is the living part of a plant?" Some of the statements emphasized by heavy type, which are evidently intended for memorizing, are questionable. Here is one: "II. Protoplasm is found *everywhere* in a living plant." The statement has its exceptions. Whether the child is supposed in one lesson to have arrived at this objectively, or whether the teacher is supposed to take it for granted that they are capable of fully understanding the scope of *everywhere* in this sentence, we are left to guess.

Scrophularia.—C. G. Lloyd, (Drugs and Medicines N. A., ii., pp. 106-116; one plate and wood cut.

The Task of American Botanists.—W. G. Farlow. (Pop. Sci. Month., xxxi, pp, 305-314.)

"If we are behind some other nations in the quantity and quality of our botanical investigations, what is the reason? It must be through lack of inclination, lack of time, lack of means, or lack of the requisite training." With his usual clearness and masterly grasp of the subject, Prof. Farlow then tells much that we knew or had heard before with a force and individuality quite original. He speaks pretty plainly against the amount of class-work required of professors in our American colleges and the need of more assistance, stating that a "great gain will have been made if the public can be persuaded that professors in colleges ought to be allowed time for, and be expected to do, original work." In answer to the question, "What sort of botanical investigation is needed in this country?" he says: "In a new country the first work must be almost entirely descriptive and classificatory; and, when this work has reached a sufficiently advanced stage, histology, physiology and the study of life-histo-

ries assume more and more importance." Where do we stand? "We stand where Germany formerly stood. Our country is so large, and some parts of it so little explored, that descriptive work has by no means reached its limit. The only question is how to have it well done." "Strange as it may seem to some ears, it appears to me that histological and developmental work is what is best adapted to non-professional botanists." "Inasmuch as the larger libraries and collections are in the colleges and larger cities, descriptive work, if it is not to be shabbily done, must be done by persons connected with colleges, having ready access to herbaria and libraries." "If we should look to college professors and a few experts for what we still have to be done in systematic botany, and to those connected with the more important laboratories for physiological work of the higher grade, histology and the study of life-histories are subjects of vast extent, and, in most of their phases, can be studied successfully by private individuals as well as by professionals." "In the older parts of the country, including even the Mississippi Valley, it seems to me that the rising generation would make the best use of their opportunities by working out some of the many important questions in histology, and in studying the life-histories of different plants, more especially cryptogams."

Tulostoma mammosum—The Growth of.—C. E. Bessey. (Amer. Nat., xxi., pp. 665, 666.)

Botanical Notes.

Report on the Scientific Results of the Exploring Voyage of H. M. S. Challenger, 1873–76.—*Part IV., Diatomaceæ.* Count F. Castracane; pp. 178; 30 plates, 393 figs.

The literature of the Diatomaceæ is so scanty that any addition to it is joyfully welcomed, especially when, as in this instance, we have the summing up of the results of a famous scientific expedition. We cannot help wishing, though, that authors would refrain from creating new species upon such slight pretexts, for many of the forms figured are clearly referable to species that have been already described by others under different names, and so the list of synonyms is unwarrantably increased to the confusion of the skilled student and utter bewilderment and dis-