Conspectus Floræ Africæ, ou Enumération des Plantes d'Afrique Par Th. Durand et Hans Schinz. Vol. v. Monocotyledoneæ et Gymnospermeæ. 8vo. Pp. 977. (Bruxelles, 1895)

IT may, perhaps, be asked why the fifth volume of a work should appear before the fourth and all the preceding ones. Doubtless the authors were influenced thereto by the fact that neither Oliver's "Flora of Tropical Africa," nor Harvey's "Flora Capensis," has reached the groups enumerated in the bulky volume under notice. Certainly this course has the advantage of utility, and will be of great service in the elaboration of the continuation of the works named. As an index to the scattered literature of the subject, the present volume is indeed invaluable. It covers all that may be called African, including the Atlantic islands from Madeira to Tristan d'Acunha, and the islands of the Indian Ocean, from St. Paul and Amsterdam to Mauritius, Madagascar, and Socotra. It is true, the geography of the plants is not worked out all through so fully as Mr. C. B. Clarke has done the Cyperaceæ. For instance, the characteristic grass of Tristan d'Acunha and St. Paul and Amsterdam islands, *Spartina arundinacea*, is only recorded from the former group. In other respects, Mr. Clarke's elaboration of the 800 Cyperaceæ is by far the most complete and thorough part of the volume, though it is blemished by the introduction of a very large number of names of new species without descriptions.

But, leaving all criticism out, this volume will be welcomed alike by horticulturists and botanists; by the former, more especially, because it contains the petaloid monocots, so numerous in South Africa. Synonyms and references to figures in the various illustrated serials add to the usefulness of the enumeration. To give an idea of the extent of this compilation, it may be mentioned that the Liliaceæ include nearly 1100 species, belonging to 67 genera. *Aloe* alone numbers nearly 100 species. The Irideæ are about 700 strong; *Gladiolus* being the largest genus, with 143 species. Orchids also exceed 1000 species, belonging to 74 genera; and 160 species of *Habenaria* are enumerated. Palms are less numerous than might have been expected, considering the comparatively large number in a small group of islands like the Seychelles. Only 63 species are given, which is about a quarter the number inhabiting British India. This is largely due to the genus *Calamus* being represented by only one species in Africa, whereas there are 72 in India. W. B. H.

Leçons de Chimie. Par H. Gautier et G. Charpy. (Paris: Gauthier-Villars, 1894.)

THE general plan of the second edition of this work does not differ essentially from that of its predecessor. The introductory portion on generalities—dealing with states of aggregation, laws of combination, equivalents and atomic weights, physical and chemical transformation, chemical equilibrium, the velocity of reaction, thermochemistry, &c.—has been recast, and now occupies one-fifth of the volume. In the descriptive portion, which is concerned with inorganic chemistry only, Moissan's work on fluorine, the diamond, and boron has been introduced. It is characteristic of a French text-book that even now it is deemed necessary to print alongside each important atomic equation the corresponding equation based on equivalents. In the same connection it will be somewhat disconcerting to English students to find that "Le poids atomique est égal au poids équivalent pour les éléments suivants: . . . Pour tous les autres éléments, la valeur du poids atomique est double de celle de l'equivalent." In other respects the book is well up to date, and contains much useful information expressed with the clearness and precision for which French text-books are deservedly famed. J. W. R.

LETTERS TO THE EDITOR.

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Variation and Specific Stability.

I AM afraid that in my anxiety to compress too long a statement, I did not make the points which I wished to bring forward in the recent discussion at the Royal Society sufficiently clear. I have therefore written out the following summary:—

(1) All organisms vary. That in doing so they obey Quetelet's law was suggested by Mr. Darwin himself more than twenty years ago. He observes (NATURE, September 25, 1873, p 432):—"It is known from the researches of Quetelet . . . that men may be grouped symmetrically about the average with reference to their height. . . . We may presume that this is the usual law of variation in all the parts of every species under ordinary conditions of life."

(2) Prof. George Darwin supplemented this in a following number (October 16, p. 505) with a very lucid account of the principle. In this he says:—"We may assume with some confidence that under normal conditions, the variation of any organ in the same species may be symmetrically grouped about a centre of greatest density."

(3) A well-known illustration is that of a marksman shooting at a target. The distribution of his shots will follow the same law; they will be grouped round a centre of greatest density, which is easily ascertained, as it is the centre of gravity of the circumscribed figure. And on successive trials, if all conditions remain unaltered, the position of the centre will remain the same, though the positions of the shots will be different.

(4) No two individual representatives of a species in nature are exactly alike. All differ in some respect. We may picture the aggregate, however, as grouped with respect to any discriminating character like the shots on the target. Our conception of the species to which they belong is an abstraction which we endeavour to represent in our museums by a specimen which would be placed as near as possible to the centre of greatest density. Such an abstraction we may call the *mean specific form.*

(5) Returning to the case of the target, it is obvious that if some new condition be introduced, such as a wind blowing transversely, every shot will be affected, and the centre of density of the system will be shifted. What is the analogous result when we are dealing with the aggregate of individual organisms representing "a species"?

Natural selection will come into play, to begin with. It may be that some hitherto indifferent variation may be favoured by the new condition. Others will be relatively handicapped, and such a favoured variation will get the upper hand. It is obvious that the result will be to shift the centre of density: the mean specific form will have undergone a corresponding change.

(6) It is probable that so simple a result is not the usual one, and what actually takes place is much more complex.

Mr. Darwin concludes "that organic beings when subjected during several generations to any change whatever in their conditions, tend to vary." ("Variation of Animals and Plants," ii. p. 250.) I infer therefore, and all the facts which have come under my observation confirm it, that a change in the external conditions, otherwise the *environment*, will provoke *some* variation in the organism, which I may call the *stimulated variation.*

(7) It appears to me that from the Lamarckian point of view, the stimulated variation ought to be immediately adaptive. From the Darwinian this is not necessarily the case. It may be either advantageous or, at any rate, indifferent. ("Changed conditions generally induce mere fluctuating variability." Darwin, "Origin," 6th ed. p. 131.) Prof. George Darwin, in the note above cited, traces out the result in the two cases. In the former case, "with continual intercrossing," the new variation will get the upper hand, and the centre of density will be shifted; in the latter it will, by continuous "weeding out," be, after a temporary displacement, eventually restored.

(8) This leads to the consideration of the *stability* of the mean specific form. Some species seem to yield pretty rapidly, though with an appreciable *inertia*, to the influence of changed condi-