

he believed, a pretty unanimous consensus of opinion in the Council. Outside, opinion has at once declared itself with strong approval of this application of the funds, and it is indeed evident that, if the Council can succeed in establishing health laboratories which shall find for the health students of this country establishments properly equipped such as those of Pasteur, Koch, and Miquel, the Exhibition will not have lived its short life in vain, but will leave behind it an institution not only of permanent value but of growing importance and of large promise. The Commissioners of 1851 will certainly see with great satisfaction this liberal intention of the Executive Council of the Health Exhibition to add to those laboratories which they have already provided one which is so greatly needed to complete the means of study and of education which South Kensington supplies in other departments of technical and biological research and teaching. They will probably make no difficulty—or, rather, they will have the strongest reason which a desire for national usefulness will give them to overcome any difficulty—in providing a suitable site for such laboratories. Even if the means which the surplus may provide should not be adequate for the establishment and endowment of such a laboratory, there is little doubt that, with this good beginning, so much may be effected as will afford the best possible reason and the largest inducement to societies such as the Royal Society, the British Medical Association, the British Association, and others to make grants to students conducting research in the laboratories. The Government can hardly refuse to make grants in aid of an institution which in any other country than this would be wholly supported by State funds—witness the health laboratories of France and Germany, which are liberally maintained by State endowments. In this country, however, we are accustomed to look to private enterprise, and the liberality of societies or committees, to furnish at least a large part of the funds required for scientific research or endowment, and it is satisfactory to know that the Council of the International Health Exhibition have favourably considered the proposition that they should take the first step in this useful direction. Every one interested in the promotion of real health-progress will trust that it will soon be an accomplished fact.

THE BUTTERFLIES OF EUROPE

The Butterflies of Europe. Described and Figured by Henry C. Lang, M.D., F.L.S., &c. Pp. 396, Super-Royal 8vo, with 77 Chromo-lithographic Plates. 1881-1884 in parts. (London: L. Reeve and Co., 1884.)

FOR some years past the writer of this notice has, almost annually, formed one of the members of that large class of Englishmen who, each year, spend a few weeks in the Alpine and sub-Alpine districts of Europe for "relaxation." The writer prefers to leave it to the taste and fancy of the individuals interested to define the meaning of the latter term. He has naturally met hosts of "foreigners" of different nationalities engaged in the same pursuit. Whatever may be the state of the weather or other conditions incidental to travelling of this kind, those *voyageurs* of Gallic origin succeed in amusing themselves after their own special fashion. The Teutonic

element also succeeds, but in an entirely different manner. The Americans seem tolerably successful. They leave home to "do" Europe, and they "do" it, in their own businesslike fashion,—business and pleasure are carried out on the same principles. Then there comes the large class of our own countrymen and countrywomen. We must confess that, according to our observation, the majority of these do not bear the outward appearance of enjoyment (especially the male portion). There is something apparently wanting. They have left their business or profession behind them, and the void thus occasioned cannot be satisfactorily filled in. From these must, of course, be separated those who find enjoyment in the excitement of Alpine climbing, and some others. Amongst these others are those who may be seen with *vasculum* at back, or insect-net in hand (very frequently in ill-disguised clerical garb), enjoying *themselves* to an extent unknown to, and often not understandable by, their fellow-countrymen who have voluntarily placed themselves under the same conditions. Probably a still larger amount of Teutons may be observed provided in the same way. And only this year we found ourselves seated next to a New England divine and his wife, and overheard the latter read out to her husband an advertisement of a butterfly-book, with the remark, "That would just suit *you*."

In the foregoing notes we have tried to draw a picture which we (perhaps we are prejudiced) believe to be tolerably natural. The pursuit of some branch of natural history studies on our travels adds a zest to the other conditions of surpassing value. If pursued systematically, it can hardly be termed "relaxation," if taken to mean "doing nothing." But if the work be harder (and it often is very much harder) than ordinary occupations, it is often the one thing needed, both for health and enjoyment.

Of the bearers of the insect-net in the Alps the majority occupy themselves with butterflies and moths, and the majority of these again with butterflies only. To an Englishman accustomed only to his own meagre, and declining, butterfly fauna, the wealth and beauty of forms is marvellous. With the exception of a small, but useful, manual, published by Mr. W. F. Kirby more than twenty years ago, and which consists almost entirely of laconic descriptions without figures, there has been, up till now, no work in the English language that enables collectors of European (as opposed to British) butterflies to name their captures without the troublesome comparison of some noted collection. These therefore will thank Dr. Lang for having supplied the deficiency, and in a generally satisfactory manner. The author has adopted no new system of his own. He follows Staudinger's German Catalogue, describing (for the most part originally) and figuring those species that occur in Europe proper, and simply describing those that have not occurred in "Europe," but still form part of the "European Fauna" (a term becoming daily more difficult to define). We think there is evidence of a little too much dry routine in the text: the descriptions appear to be excellent, and there is always a notice of the larvæ when known, and tolerably copious geographical information as to distribution, but the class of readers who will mainly use the book would be more readily caught by a mixture of

popular matter, recalling to their minds some of the scenes in connection with their own captures, or serving as a stimulant for future expeditions. But after all it is the *plates* that will be most frequently consulted. Of these there are seventy-seven, mostly crowded with figures, and including a few of transformations. Without the recent adaptation of chromo-lithography, in a superior form, to natural history subjects, the publication of such a work as this (at the price) would have been impossible. The author estimates that there are more than 800 figures on these plates. It is impossible here to criticise them *seriatim*. Those subjects that appear the most difficult are often the best (perhaps more detail in the way of "stones" was used on them), and we are much pleased with the *Hesperidæ*, which, easy as they may look at first sight, must prove very troublesome of application. The "Blues" and "Coppers" (*Lycenidæ*) are fair, but naturally fail in effect where metallic colours are necessary. The worst, to our mind, are those of the *Satyridæ* (of which our "meadow-brown" is a familiar example), and yet they *look* the easiest: we think here there is evidence of trying to make too many species, with varying shades of practically the same colour, accommodate themselves to one "stone." The size is rather too large for a book to be used as a travelling companion, but we think it is rather intended for home study. Paper and type are very good (the former almost unnecessarily so). There is not much to find fault with in the way of uncorrected errors. This is satisfactory, because careless correction is the crying evil of the present day, even in works claiming a much higher scientific position than does this, and often shows up the amount of knowledge possessed by writers of the authors and works they quote. But such glaring errors as the following should not have escaped correction:—Page 47, "Illus. Mag." for "Illiger's Mag.;" p. 61 (and elsewhere), "Wein" for "Wien"; p. 153, "Sellmann's" for "Silliman's"; p. 380, "Thurnberg" for "Thunberg"; and, as a crowning morsel, p. 379, "Aumer Kungen" for "Anmerkungen." In notices of some of the recent additions from Central Asia, the author uses indiscriminately (sometimes on the same page) "Samarcand" and "Maracand" as localities; we thought it was generally understood that the latter is only the ancient name of the former.

We have hitherto dealt with this work from a popular point of view. But there is also the scientific side of the question. The book will be of service as collectively giving good descriptions and figures of all known European species brought down to date, and thus avert the necessity of search through a multitude of scattered publications; and in this it will be useful to other than English readers.

On the title-page the author adopts a super-title—"Rhopalocera Europæ." This we think a pity in a work otherwise entirely in the English language.

R. MCLACHLAN

ELEMENTARY MATHEMATICS

Lehrbuch der Elementaren Mathematik. V. Schlegel. Pp. 712. (Wolfenbüttel, 1878-1880.)

WE have not had the good fortune to meet with this work, but having now before us an elaborate notice of it by M. Hoüel in the *Bulletin des Sciences*,

Mathématiques et Astronomiques, December, 1882 (pp. 301-313), we have thought that a few passages from the notice would be acceptable to some of our readers, and lead them to a personal examination of the original treatise.

The writer's opening remarks have much truth in them:—"Nous sommes habitués depuis longtemps à considérer l'apparition d'un traité élémentaire de mathématiques comme un événement pédagogique ou commercial n'ayant rien de commun avec la science pure. Si l'on met à part quelques honorables exceptions, c'est toujours le même livre qui reparait sous une couverture de couleur différente, avec quelques pages transposées, quelques propositions secondaires introduites ou supprimées, quelques démonstrations modifiées sinon perfectionnées, quelques développements de plus suivant les tendances des programmes officiels. Quant à la manière d'exposer les principes fondamentaux de la science, rien n'est changé. Les découvertes qu'on a faites dans les hautes mathématiques depuis un siècle et qui ont si admirablement éclairci les difficultés que présentaient encore les éléments d'algèbre semblent étrangères à nos auteurs, qui expliquent les imaginaires comme au temps de Bézout et de Lacroix, et présentent parfois à leurs lecteurs des notions géométriques en arrière de beaucoup sur celles qu'exposait Euclide il y a plus de deux mille ans. . . . En Angleterre, l'enseignement est resté ce qu'il était au temps de Barrow et de Simpson; heureusement le vieil Euclide a été choisi et fidèlement conservé à l'abri des prétendus perfectionnements des traités modernes."

M. Victor Schlegel is a pupil of H. Grassmann, and his present work is inspired by the bold views of the author of the "Ausdehnungslehre." It consists of four volumes devoted to arithmetic, algebra, plane and solid geometry, and plane and spherical trigonometry. Vol. i., "Arithmetik und Combinatorik" (182 pp.), treats of elementary algebra and of the theory of combinations. "Le tout est exposé avec une concision qui n'exclut pas la clarté, et avec une rigueur irréprochable." The reviewer's attention is especially directed to an analysis of vol. ii., "la partie vraiment originale de l'ouvrage." In 222 pages are laid down the principles of plane geometry, the ideas in which are those first introduced, we believe, by Grassmann. A full statement is given of the fundamental hypotheses, and the treatise consists of two sections. The first, "Geometry of Figures in Motion," naturally discusses the geometry of the straight line and of the plane; the second, "Geometry of Figures at Rest." A collection of 737 exercises closes the book. The following remark by M. Hoüel is deserving of a place here:—"La tendance de la nouvelle école à remplacer le raisonnement par le coup d'œil nous semble éminemment dangereuse. Le sentiment de la forme est un précieux auxiliaire, auquel les illustres inventeurs de la géométrie pure ont dû une grande partie de leurs découvertes: mais rien en mathématiques ne peut dispenser de la démonstration, d'autant plus que cette partie de la tâche est en général la plus aisée. Dans le cas actuel, la marche d'Euclide n'est pas plus longue, et ne laisse aucun doute dans l'esprit."

The third volume, Rectilinear (or Plane) Trigonometry, is founded, in like manner with the second, on a treatise on the subject published by Grassmann in 1865.