

Similarly, in the case of the Bunsen cell the student is informed that, "the  $H_2$  appearing simultaneously at the carbon pole(?) is oxidised into  $H_2O$  by the nitric acid." It is surely a new discovery that hydrogen appears at the negative plate in these elements, and one well calculated to upset all present electrolytic hypotheses.

The induction coil and its action are next considered, and here again some mistakes occur.

"The E.M.F. of the induced current depends upon several factors: (1) It is directly proportional to the intensity of the current change in the first wire. (2) It is directly proportional to the rate of change of the inducing current."

It is difficult to see any difference between (1) and (2); there is probably a misprint somewhere, but this is precisely the kind of blunder most calculated to waste the time and temper of a student who is not strong in physics. In describing the theory of the extra currents of make and break it is stated that—

"as the duration of this induced current (the extra current at make) is very short its effect is soon exhausted, but not before it has produced the result that more time is required for the current to reach its full strength than would have been the case if the wire had been perfectly straight."

Now the extra current at make lasts just as long as there is any variation of the primary current, and therefore as long as there is any induced current in the secondary coil, and its effect is no sooner over than any of the other effects involved.

A further error in connection with the same subject is worth noting, since it is not peculiar to this volume, but occurs in other text-books of physiology.

"On breaking the circuit the circuit of the primary is broken, so that no induction currents can be set up in the primary."

"The fall in potential is therefore instantaneous."

Now the fall in potential at break is *not* instantaneous, otherwise the E.M.F. of the induced current in the secondary circuit would be infinitely great. The primary circuit cannot by any means be instantly broken, and there *is* an induced extra current in the primary at break. Only in the circuit during break there is a high resistance in the spark gap, and both the extra current and the primary current are rapidly diminished by this rapidly increasing resistance.

The more purely physiological part of the book is fairly well written, and contains descriptions and figures of new and sometimes ingenious adaptations of simple apparatus for experimental work. Some of these artifices for making simple apparatus are certain to become extensively used, and it is here that the book will probably render most assistance to teachers of physiology. The book is also copiously illustrated, and contains a large number of reproductions of experimental tracings. Many of these it is impossible for the student to imitate for himself, but they will doubtless form valuable aids in assisting him to recollect the results of class demonstrations.

#### OUR BOOK SHELF.

*L. Rüttimeyer. Gesammelte Kleine Schriften allgemeinen Inhalts aus dem Gebiete der Naturwissenschaft. Nebst einer autobiographischen Skizze.* Edited by H. G. Stehlin. 2 vols. 8vo. Pp. iv + 400 and 455. With a portrait and woodcuts. (Basel: Georg et C<sup>ie</sup>, 1898.)

In these two well-printed and handy volumes we have the more important of the contributions made to science by the late Prof. Rüttimeyer, which could be reproduced without costly illustrations. By the kindly care of Leopold Rüttimeyer and H. G. Stehlin, we have these as an "In Memoriam" tribute, the crowning stone of which is the very interesting series of notes by Prof. Rüttimeyer himself of the chief incidents of his life. In a work of this nature, there is left but little room for criticism, and we will serve the reader's purpose best by a brief notice of the contents of the volumes. In the stray memories of his scientific life we learn that, born in February 1825, his early days were spent in the country; his life was in the open air, wandering over field and meadow, in woods, and up the hill-tops. Educated at home, he records his happiness at having escaped the mischiefs and sorrows of a public school. When sixteen years old, falling under the influence of Bernhardt Studer, his studies took the direction of the natural sciences, and his future career was marked out. In these "Memories" many are the interesting facts recorded in a busy life. As an author he began with a "Mémorial on the Nummulitic Region of the Bernese Alps," which was published in 1848, and we have on record a long list, published from year to year, with but few exceptions, until 1895, when in June he put his initials to the "Memories," passing out of the world, though not beyond memory, on the 25th of the following November. Ever fond of nature, his latter years were rendered happier by winter sojourns in the sunny south of Europe.

The memoirs in the first volume are chiefly of a zoological character. We find an essay on the form and history of the vertebrate skeleton; on the historic method in palæontology; on the origin of our animal kingdom; on the limits of the animal kingdom—a critical notice on Darwin's writings; on the alterations in the animal life in Switzerland, since the appearance of man; on the evolution of organic beings. Most of these memoirs were at one time of interest, but while they were, as we think, worth gathering into a volume, it must be confessed that the greater part of their novelty has gone.

The second volume contains a long essay, "Vom Meer bis nach den Alpen," being a sketch of the structure, form and colour of the country met with in a section between England and Sicily; also a paper on the people of the Alps; a glance at the history of glacier studies in Switzerland; a very brightly written sketch of Brittany and its people. Obituary notices of Louis Agassiz, Charles Darwin, Peter Merian, and Bernhardt Studer, bring this volume to an end. There is in an appendix a list of all Rüttimeyer's writings, arranged in chronological order.

*Recherches expérimentales sur quelques Actinomètres Electro-chimiques.* By H. Rigollot, Docteur ès Sciences, Chef des travaux de Physique à l'Université de Lyon. Pp. vi + 138. (Paris: Masson et C<sup>ie</sup>, 1897.)

In this work M. Rigollot has collected together, in a convenient form, his researches on photo-electric cells. Two metallic plates being immersed in an electrolyte, and the one exposed to light whilst the other is protected from it, a difference of potential is established between them. The author gives the large amount of valuable information, which he has accumulated in his study of this phenomenon, in the form of experimental results;