

typographical errors. There are appended "Results of the Exercises." We take leave of Mr. Muir with the hope that he may be soon called upon to revise his book, with a view to the issue of a second and succeeding editions.

Experimental Chemistry for Junior Students W. Emerson Reynolds. Part II. *Non-Metals*. (London: Longmans, Green and Co., 1882.)

THIS is a most excellent little book on experimental chemistry, and should be especially useful to medical students, for whom it is chiefly designed.

There is a very large amount of useful information and descriptions of experiments in clear, but not too commonplace language, to make a beginner using the book feel at any loss when he shall come to use a larger work. The experiments are numbered for reference, and are also in most cases explained by an equation in symbols.

The student who works through this book will certainly know something practical of chemistry, as it can scarcely be used as a cram book.

We notice that in some of the formulæ and equations the symbols are adorned with dashes, which it is to be hoped have been explained in the first part, otherwise they would be somewhat misleading, or at least confusing to students at the stage at which they commence to use the book.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

Vivisection

IN NATURE (vol. xxv. p. 482) there is a letter signed "Anna Kingsford," to which I feel compelled to reply. Not that I contemplate convincing your correspondent of her error, for I have only facts to offer; I write only for the unprejudiced portion of the English public, to protest with indignation against the calumnies regarding physiology and so-called vivisection, especially as practised here by Prof. Schiff.

The theoretical arguments for and against vivisection have been discussed to satiety; I wish to keep strictly to a question of facts, and the only passages in Mrs. Kingsford's letter against which I protest, are the words, "the horrible tortures perpetrated by Professors Schiff, Mantegazza, and Paul Bert"; "the atrocities of vivisection"; "the prolonged and exquisite torments to which domestic animals are subjected"; and other similar passages. In the first place, Mrs. Kingsford shows how ignorant she is of the subject she undertakes to enlighten the public upon, by mentioning Mantegazza as "a fair type" of a Continental vivisectioner, when the truth is that Mantegazza did long ago make some experiments on living animals, but has not done so for very many years, is, in fact, not a vivisectioner.

As I have not been in Prof. Paul Bert's laboratory, and have therefore not been an eye-witness of his methods, I will say nothing of the attack against him.

I now come to Prof. Schiff, who, of all living physiologists, is the one who carries out the most numerous experiments, and who may therefore fairly be taken as a typical representative of physiological research on the Continent. Having been for the last two years constantly in the learned professor's laboratory (and, I may add, in a perfectly independent position), I am able to give authoritative testimony as to his methods of study, and this testimony is, that *never* during this time was vivisection practised on a *feeling* animal; and I have repeatedly heard Prof. Schiff (whose word no one will dare to doubt) declare that he never in his life had operated on an animal that could feel pain—a fact which any one who knows this pre-eminently humane and kind man, will readily understand. I do not say that no vivisections are carried out; on the contrary, often several operations included under this comprehensive denomination are

performed in one day, but *never* so as to cause pain. Either the animal is instantaneously killed by a puncture in the "medulla oblongata," and artificial respiration set up, or it is completely anaesthetised, and Prof. Schiff's first care is always to see that this has been properly done. The trial with the eyeball is a sure criterion. The anaesthetised animals are eventually killed in the same manner as the others, while still completely unconscious; few other dogs have such a painless death. In those cases where animals which have been operated on are kept alive for ulterior observations, the best proof that they do not suffer pain is the excellent appetite and healthy appearance of the dogs in the school of medicine here, where they are, moreover, excellently well-housed and fed, for Prof. Schiff says: "I like my dogs to be well cared for in every way." So much for the "horrible tortures" perpetrated on the continent.

I may be allowed to repeat a few words fallen from Prof. Schiff's mouth as characteristic of the man. On one occasion I heard him say: "I cannot bear the least pain being inflicted on animals;" on another, seeing me petting a dog which was to be experimented upon, he said: "one must never caress a dog before an operation, for otherwise, although one knows it feels no pain, one's hand is not steady for cutting."

It is true that there do exist experiments in which the animal must retain consciousness in order that the effects may be watched; but just because the animal would suffer pain, *these experiments are never carried out by Prof. Schiff*.

Prof. Schiff has repeatedly invited his calumniators (both publicly and privately) to come to his laboratory, which is open at every hour of the day to all who wish to form an unbiased opinion on the methods of vivisection, and to see with their own eyes the real facts of the case; not one has ever accepted this invitation—which shows how deep the love of truth is in some hearts.

B.Sc., STUDENT OF MEDICINE

Geneva, April 6

Precious Coral

I WAS very much interested in Prof. Moseley's note on "Precious Coral," which appeared in NATURE (vol. xxv. p. 510). During, or rather after our deep-sea explorations in the Mediterranean, last summer, the *Washington* passed a week exploring the coral-yielding banks between Sicily and Cape Bon (Africa); we were also therefore on the coral-banks of Sciacea. Most of the coral I saw—I mean, of course, precious coral—was dead and blackened, and I saw large quantities in the same state, and from the same locality at Naples. At the extreme edge of the Sciacea bank is the extinct volcano, now covered with a few fathoms of water, known as Ferdinandea or Graham's Island. I believe that the eruption of that volcano may explain the quantities of dead coral around. As to the black colour, I am of opinion that it may be due to the decomposition of organic matter, rather than to the presence of binoxide of manganese; some of the bottom samples which I collected at various depths, turned quite black after a few weeks. The disappearance of the black colour on prolonged exposure to the sun, would, I believe, confirm my view. It must also be borne in mind that precious coral, in the Mediterranean at least, never is found in mud or in muddy waters, but grows mostly on a regular coral-rock formed by Madrepora of different species.

I have often heard of Japanese coral, and saw some fine samples at the International Fishery Exhibition of Berlin, in 1880; they came from Okinawa, or Kotshi, where, in 1877, a quantity of the value of 9000 dollars was collected. It is this species which has been called *Corallium secundum* by Prof. Dana, if I am not mistaken.

A third species or variety of precious coral is found near the Cape de Verd Islands, especially San Jago; it has been distinguished by Prof. Targioni as *C. lubranti*.

As a *finale*, I may add that very little precious coral is found off Torre del Greco, from which place most of the coral fishermen hail, and in which place much of the coral collected is worked.

HENRY HILLYER GIGLIOLI

R. Istituto di Studi Superiori in Firenze, April 6

Phenological Observations on Early Flowers and Winter Temperatures

THE relation of temperature to the earliness of the season is too obvious to be overlooked, but methods of representing it numerically are of considerable interest. Since 1878 this has been done for about thirty stations in the United Kingdom by