

there is a large amount of needless repetition, for the estimation of the heat of combustion is a simple calculation, which might have been made once for all with reference to each proximate principle, especially since the bare facts, as they are put, convey but little idea to the general reader. The chemistry of foods is very superficially and imperfectly treated, not nearly so full as it deserves; and the botany would have been better if a more thorough study of *materia medica* had been undertaken. There is one sentence we have in vain attempted to understand. When speaking of the sweet chestnut, the author, after remarking that at present it may be regarded as a luxury, says, "The first step to a great extension of its use would be to make the ordinary horse-chestnut a safe and agreeable food, since it grows in our climate, and could be obtained in large quantities." How this can be, seems extremely difficult to understand; as is well known, the two fruits having nothing whatever to do with one another.

The descriptions of the various methods that have been proposed for the preservation of meats which have to travel long distances and through hot climates is very complete and clear. The preference is given to the method of heating, and that adopted by Mr. Jones, in which the meat is heated in vacuo, to 280° F., in the cans, is fully described. It is shown, however, that by this process the meat is stewed, and over-stewed, not roasted nor boiled. In this, and all similar processes, it is found impossible to expel all the air without over-cooking the meat.

Another subject of particular interest which is discussed is the preservation of milk. Two methods, it appears, are adopted in America, one in which the milk is simply evaporated to one-fourth its original volume, when it will often keep for a month, and another in which sugar is added; by the latter process it remains good for an indefinite time, and contains about one-third of its weight of sugar. The author agrees sufficiently with Dr. Daly in his condemnation of the employment of this preserved milk for infants, to quote an article by him which appeared last year in the *Lancet*.

Extract of meat, especially Liebig's, occupies the greater part of one chapter, and we think the author has done good service in setting in a clear and unmistakable light the true value of that expensive luxury. He shows that its chief value depends on the meaty flavour it is capable of imparting, and that its nutritive value is *nil*. He remarks—"Its proper position in dietetics is somewhat more than that of a meat-flavourer, but all that is required for nutrition should be added to it. . . . Used alone for beef-tea it is a delusion." That this is correct is evident from a consideration of the method by which it is prepared, for "during the process, all the fat and as much of the gelatin and albumen as can be extracted are removed from the solution of flesh, whilst the fibrin, being insoluble, is necessarily left behind. Hence there remain water, salts, osmazone, and the extractives of flesh, or, in general terms, the flavouring matters and the salts of meat—thus leaving out all that is popularly (and correctly) regarded as nutritious."

Many tables are given to show the effects of different substances on the respiration, pulse, exhalation of carbonic anhydride and aqueous vapour. There seems to be a

want of association between the great mass of facts, which must have been the result of long and continuous labour; and they are undoubtedly put forward in a way which is not best suited to convince the scientific student. For example, the effects on the pulse, &c., of tea dissolved in water is given in full, but under the head of water no mention is made of its physiological action, though decidedly, by itself it changes the pulse rate, if nothing else.

Several recipes of the fourteenth century are quoted from "Cury," a copy of ancient manuscript recipes of the master cook of Richard the Second. There are also many scriptural references, and a very inappropriate abstract of an incident which occurred at the Worship Street Police Court.

OUR BOOK SHELF

A Manual of Metallurgy. By George Hogarth Makins, M.R.C.S., F.C.S., &c. (Ellis and White, 1873.)

THE present edition of this work presents a marked improvement over those which have preceded it, but it is still far from being all that even a small manual might be. In the preface the author expresses a hope that the volume, "in which the leading points connected with the principal metals are set forth, may be found useful," and as there are singularly few metallurgical works in the English language, we have but little doubt that this hope will be realised. Mr. Makins has long enjoyed the reputation of being a most accurate assayer, and the descriptions of the processes of assaying gold and silver are careful and valuable. The portion of the work which is the least satisfactory is that devoted to iron.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

The Huemul

THE Huemul of Chili and Patagonia, referred to in *NATURE*, pp. 253 and 263, was first recognised in modern scientific literature by M.M. Gay and Gervais, who in the *Annales des Sciences Naturelles* for 1846 (v., p. 91), showed that the so called *Equus bisulcus* of Molina, was a species of Deer (*Cervus*), which they proposed to call *Cervus chilensis*.

In Gay's "Fauna Chilena" (plates 10 and 11), the female and skull are figured. Concerning the nomenclature of species, I have published some remarks in the last volume of the "Annals of Natural History" (ser. 4, vol. vi. p. 213), to which I beg leave to refer such of your readers as are desirous of further information on this subject. P. L. SCLATER

11, Hanover Square, W., Aug. 6

Perception and Instinct in the Lower Animals

IN answer to Mr. George J. Romanes (*NATURE*, August 7) I beg to say that I particularly inquired of my friend whether he had been to or near his old house on the day the dog returned, or shortly before, and he assured me that "he had never been near it since he left." I ought to have stated this in my account of the circumstance.

I shall make no further remarks on the subject, because I believe that nothing satisfactory can be arrived at till experiments of the nature indicated in my last letter have been systematically carried out. ALFRED R. WALLACE

Collective Instinct

THE writer of one of the books on Indian sport relates how he saw a herd of antelopes, driven backwards and forwards by four wolves, which surrounded the herd, each guarding a diffe-