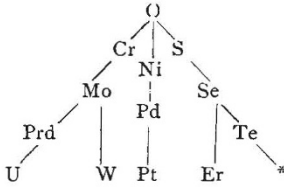


The system works out in such a way that each element in the first row of the periodic table becomes the parent of all the elements in its own vertical series.

Oxygen, for instance, is the root of the following genealogical tree:—



Chromium, nickel, and sulphur, in this way belong to the second generation. Molybdenum, palladium, and selenium to the third generation, and so on. The constants of the elements, such as atomic weights, densities, atomic volumes, specific heats, atomic heats, and their electrical and magnetic properties, their valency, &c., are then discussed with the view of justifying the mode of treatment adopted. It is here shown that on arranging the elements according to the author's system, besides the well-known relations between properties and atomic weights, additional simple numerical relations are traceable between the magnitudes of the atomic constants themselves, and also between these magnitudes and the numbers denoting the degree of condensation of the groups to which the elements belong. The use to which these may be put as a means of controlling the values of atomic weights and predicting the properties of undiscovered elements is indicated.

The second and not the least useful part of the book contains a collection of physical constants, from which the data used in the first part were chosen.

The book is a suggestive contribution to the literature on a subject which since the time of Prout has been prolific of speculation, but which even yet seems slow to condense and take a form sufficiently definite to warrant its being raised to the rank of a theory. J. W. R.

*The Future of British Agriculture.* By Prof. Sheldon. (London: W. H. Allen and Co., Ltd., 1893.)

THE opening chapters of this little book are devoted to the solution of the questions, "Will wheat-raising pay in Great Britain?" and "Is wheat to be no longer king?" After indicating the reasons which led to the enormous reduction of land under wheat—a decrease of something like 42 per cent. within the last twenty-five years—Prof. Sheldon comes to the conclusion, that, notwithstanding the importation of foreign wheat, and the fact that an ever-increasing demand for milk (of all farm products the least suitable for importation) necessitates larger areas of grass land, wheat-growing will not only continue, but may soon reach its former position, an event which he would not consider to be "a sign of unadulterated good." In connection with the question of wheat-production in the United States, there is one statement, made on the authority of leading American statistical experts, which we venture to think requires qualification, namely, "that in less than twenty years from 10 to 15 per cent. of the people's food will have to be imported into the United States." This is a point on which there may well be diversity of opinion, but, as pointed out by Messrs. Lawes and Gilbert in their recent paper on "Allotments and Small Holdings," the conditions will be quite changed with increased population, rotation will gradually become general, yielding various food products for home consumption; the soil will be better cultivated, yielding much larger crops of wheat where it is grown; straw and manure will no longer be burnt or wasted; and, lastly, there are still considerable areas of rich prairie land to be brought under the plough. So that it is probable that increased density of population will less rapidly diminish the

capability of production for export than may, at first sight, be supposed.

Perhaps the most interesting chapters are those on dairy farming; and it will afford a good deal of consolation to the dairy farmers of this country to learn that Prof. Sheldon believes "the competition of the United States is within measurable distance of its limit."

The book concludes with a chapter on a most important subject—tenant farmers' interests. The author states his view of the matter in his usual clear and forcible manner, and incidentally refers to what he terms "exploded, impossible 'Protection,'" and to "that new economic craze, 'Bimetallism'."

We welcome the book as a valuable contribution to our agricultural literature, and as a useful guide to those branches in which the author is especially qualified to instruct.

### 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 intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

#### Mr. H. O. Forbes's Discoveries in the Chatham Islands.

I WRITE a final line on this subject to express my regret that I should have misunderstood Prof. Newton and attributed to him (NATURE, p. 126 above) opinions in regard to the relationship between *Erythromachus* and *Aphanapteryx* which he does not hold.

On a point of accuracy, however, in regard to the "slight confusion of dates," allow me to say that I am sure no one will admit more readily than he that this had occurred, when I remind him of his letter to me of December 22, 1892 (now before me), in reply to a note of mine requesting him to be so good as to repeat his suggestion in regard to the name for the new genus, which I was about to describe, as I had mislaid his former note. "I have no memorandum," he says, "of what I suggested to you, but only an indistinct recollection that it was *Diaphorapteryx* . . . or something like that." This was, therefore, the date of the re-suggestion, and not my visit to Cambridge on February 23, 1893. *Diaphorapteryx* was described as a new genus in the Bull. Brit. Ornith. Cl., December 31, 1892.

HENRY O. FORBES.

#### The Fundamental Axioms of Dynamics.

A VERY brief reply to such of your correspondents as have favoured my paper with direct or indirect criticisms will at the present stage of the discussion be sufficient.

Referring first to Prof. Rücker's letter on p. 126, I acquiesce in the greater part of it—especially in its concluding paragraph, but it may clarify matters if I explain (1) that I do not contemplate parts of the ether, but regard it as an absolute continuum. Not the slightest advantage is gained by pushing action and distance back a step or two—it must be exterminated. (2) That I have no faith in "action at constant distance" other than distance zero. The reason such a phrase ever appeared in my papers is because that is all I am able to deduce from the assumption of the conservation of energy. It requires identity of energy to prove absolute contact. Hence I prefer to work backwards, and, assuming universal contact action or the denial of action at a distance, to deduce therefrom both the conservation and identity of energy.

Prof. McGregor contradicts three statements in the Report of the meeting of the Physical Society (p. 117), a report which is usually admirably done, and which was well done in this case. Though not responsible I reply to his three points categorically:

(1) He was understood to object to the Newtonian statement of the first law—not to the fact or law itself.

(2) A reference to the first two pages of his paper in the February *Phil. Mag.* will show him, I think, that he has now partially forgotten what he said on the second head.

(3) It is to be admitted at once that the phrase "equally well," not "well," was employed.