(2) In all cases of allometry the part shows an absolute increase of size with time or with increase of size of the standard. For cases where, instead of this, a decrease of absolute size occurs, for example, in the abdominal limbs of crabs at and shortly after metamorphosis, we propose the new term *enantiometry* (equivalent to *negative growth*).

(3) The *elementary law of relative growth* or *law of simple allometry* can be expressed by a formula of the type

$$y = bx^a \quad \text{(for notation see later)},$$

where y is the part, x the standard or whole, and b and α are constants. When $\alpha > 1$, we have positive allometry ; when $\alpha < 1$, negative allometry ; when $\alpha = 1$, isometry.

(4) The biologically important term in this formula is the exponent α. For this we propose the term *equilibrium constant* (in place of growth-coefficient, partition-coefficient, *constante de dysharmonie*, etc.). This general term covers both growth and final proportions. To distinguish the two where necessary, as, for example, in regard to deer antlers, we may use *growth-constant* (or *actual equilibrium constant*) as opposed to *limiting equilibrium constant*. *Growth-ratio* may also be properly used as equivalent of growth-constant in certain circumstances.

(5) The constant b merely represents the value of y when $x = 1$. However, since its value affects the initial size of an organ, we may call it the *initial growth-index*.

(6) The terms *growth-gradient* and *growth-centre*[1] remain.

(7) *Notation.* In the formula of simple allometry, Teissier[2] has employed the notation $y = kx^a$, Huxley[1] $y = bx^k$, Nomura[3] $a = kb^x$, and Weymouth and Mackay[4] $p = aw^k$. It will be seen that different symbols are confusingly applied to the same term. We therefore propose that the recognised notation should be $y = bx^a$. As is customary, x and y are used for the variables, y being the dependent variable. For the essential equilibrium constant, α is used, since Greek letters stand out against Latin. k is dropped since it has been widely used in two entirely distinct senses. For the initial index, the non-committal b is chosen.

We hope that other workers in this field will see fit to adopt these suggestions.

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Structure of the Formate Ion

IN two recent letters to NATURE, B. C. Rây[1,2] and P. B. Sarkar[2] proposed a structure $\left[: C \underset{OH}{\overset{O}{\diagup}} \right]^{-}$ for the formate ion in solution, while retaining the normal structure for the acid, its esters and the formate ion in the crystal ; they suppose that on solution the formate ion undergoes the prototropic change $\left[H - C \underset{O-}{\overset{O}{\diagup}} \right] \rightarrow \left[: C \underset{OH}{\overset{O}{\diagup}} \right]^{-}$.

Such a prototropic change is usually pictured as an intermolecular process, and if the hypothesis of Sarkar and Rây is true it would be expected that the hydrogen of the formate ion would exchange very rapidly with deuterium in heavy water. The experiments of Wynne-Jones[3], Münzberg[4] and ourselves (unpublished) all go to show that the exchange process between formate ion and heavy water is extremely slow. We have found, for example, that 8 per cent exchange took place in 8 days at 100° with potassium formate in neutral solution, the exchange being accelerated by the presence of alkali. Münzberg was unable to detect any exchange in neutral solution after 300 hours at 50° C. It would seem, therefore, either that the prototropic change must be exclusively intra-molecular, which we regard as very unlikely, or that the postulated prototropy does not take place.

A second argument against the hypothesis of Sarkar and Rây, which is independent of the mechanism of the prototropic process, is to be found in the fact that an ion of the structure proposed would be expected to have an appreciable acid dissociation constant. Inasmuch as the hydroxyl group of phenol ($K_A = 10^{-10}$) and even those of the sugars exchange quite rapidly in heavy water, the slowness of the exchange of the formate ion seems to provide a second argument against the proposed structure of the formate ion. If the considerations we have put forward are valid, they constitute a further example of the application of deuterium to problems of molecular structure and mechanism.

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Production of Electron Pairs

IN a recent paper[1] we discussed the creation of positive–negative electron pairs by a beam of γ-rays traversing lead, with atomic number $Z = 82$. Results have since been obtained with $Z = 50$ and $Z = 65$ for γ-rays of energy $h\nu = 3mc^2$. It is of interest to compare these with the values given by Bethe and Heitler[2], using the Born approximation. We give below the two sets of results, together with the corresponding values of $\overline{E}_+ - \overline{E}_-$, where $\overline{E}_+$ and $\overline{E}_-$ are the average energy of the positron and electron respectively.

Z	50	65	82
$\sigma \times 10^{24}$	0·17	0·34	0·67
$\sigma \times 10^{24}$(Born)	0·13	0·21	0·34
$(\overline{E}_+ - \overline{E}_-)/mc^2$	0·22	0·28	0·33