

tion for them. To invent names for the pound-foot-second units may be helpful to beginners; but it is a small matter compared with a notation which completely specifies the mode of dependence of each unit upon the pound, foot, and second; and it is still more so when compared with a general notation which will serve for any system of units.

The difference between names and notation is well seen in the case of chemistry. The notation for a substance expresses the manner in which the substance is made up of the elementary substances; while its name, however derived, serves merely as a distinguishing mark: and just as the chemical notation for a substance may be used as a name for the substance, so the notation for a physical unit may serve as a name for that unit.

In my work on "Physical Arithmetic," published by Macmillan and Co. in 1885, and reviewed in NATURE, vol. xxxi. p. 551, I have devised a notation which is the natural and legitimate extension of existing conventions both in language and in the mathematics; and I have made that notation the basis of a method for solving problems in applied arithmetic. If the Committee of the Association for the Improvement of Geometrical Teaching are considering the subject, I ask them to consider whether any notation more in harmony with existing conventions can be devised than the notation of that work.

As a specimen I append the general notation for the chief geometrical, kinematical, and dynamical units. The word *by* corresponds to \times , and the word *per* to \div , or $/$ as now frequently used by physicists. The same method of notation applies to the thermal and electrical units. The notation for any special system is obtained by substituting the special names of the fundamental units **L, M, T**. The test of the value of a notation is the amount of facility it offers in reasoning; by referring to "Physical Arithmetic," anyone may see how this notation stands the test.

NOTATION FOR GENERAL UNITS.

Quantity.	Notation.	Dimensions.
I. Geometrical.		
Length	L	l
Surface	L by L = S	l^2
Volume	L by L by L = V	l^3
Angle	L arc per L radius	l^0
Sine	L opposite per L along	l^0
Curvature	Radian per L arc	l^{-1}
II. Kinematical.		
Time	T	t
Velocity	L per T	lt^{-1}
Acceleration	L per T per T	lt^{-2}
Angular velocity	L arc per L radius per T	t^{-1}
III. Dynamical.		
Mass	M	m
Density	M per V	ml^{-3}
Mass-vector	M by L	ml
Momentum	M by L per T	mlt^{-1}
Force	M by L per T per T = F	mlt^{-2}
Pressure	F per S	$ml^{-2}t^{-2}$
Work	F by L = W	ml^2t^{-2}
Activity	W per T	ml^2t^{-3}

ALEXANDER MACFARLANE.

Austin, Texas, May 28.

The New Degrees at Cambridge.

A FEW years ago it pleased the dominant body in the University of Cambridge to institute a Doctorate of Science and of Letters. Candidates for these new degrees were required to be of a certain academical standing, and to submit the proofs of their qualifications to the respective Special Boards of Studies, who, after certain formalities, were empowered to forward their claims to the General Board of Studies for approval. By any well-meaning persons this step was thought to be a great encouragement to both letters and science. It was at the same time understood that the qualification for the Doctorate in Science was to be rather less than was required for admission to the Royal Society—a standard which all will admit is not too high. Whether any similar understanding was agreed

upon as regards the Doctorate in Literature is uncertain. At first there was no particular desire shown among the best men of science and literature to aspire to the new distinction, and it is rumoured that a considerable amount of persuasion and friendly pressure had to be used to induce such men to submit to the infliction. But in time a few leading lights underwent the ordeal and were duly invested. The way being cleared, a good many others have followed, and as the Boards have not been too severe in judging the claims of candidates, the outbreak of "scarletina" has become rather general. However, no particular harm has ensued, and the coffers of the University have reaped the benefit—for the fee is not small.

But now there is another aspect to this business. The new Doctorate is inferior in rank to that of the old Faculties. The senior Doctor in Science or Letters must always yield precedence to the youngest Doctor in Divinity, Law, or Physics. So far, those who have sought the new degrees have known what their position would be; but of late the Council of Senate has taken upon itself to determine that when an honorary degree should be given to any distinguished man of science or letters he is not to have the higher degree of LL.D., but to be content with the lower rank. As a rule honorary degrees are almost invariably given to strangers—foreigners or colonists. They are not aware of this fine though real distinction; and thus this very day the Senate House at Cambridge has witnessed the time honoured and highly valued distinction of LL.D. being conferred on a number of excellent gentlemen, beginning with the Lord Mayor of London, while the new and inferior rank of Sc.D. is bestowed on one of the most distinguished biologists of the United States, whom the sister University is this week to recognize as a D.C.L.

It may be urged that proceedings like this are necessary to reflect the proper amount of dignity on the new "honour," and that in time it will be regarded as highly as the old one has been. But I submit that this is not fair to the innocent recipients, and, moreover, that the University should recognize the fact that its highest honours are not to be bestowed upon successful merchants, politicians, and persons of eminent social standing, while the greatest men of letters and science have to take up with the lower grade.

June 20.

"After-Glows" at Helensburgh.

I BEG to inclose a letter from Mr. L. P. Muirhead, with reference to the "after-glows" recently seen at Helensburgh, which you may think worthy of a place in NATURE.

ROBERT H. SCOTT.

Meteorological Office, 116 Victoria Street, London, S.W.,
June 8.

Rosemount, Helensburgh, June 4, 1887, 21h.

DEAR SIR,—I do not notice any remarks in any of the weather reports or in the press concerning the after-glows, and as they may be local only, I drop you a line. All have lasted about 45m.; the first of any note, on the 17th, commencing well down on the eastern, and finally fading away on the western, horizon, all through of a deep rosy red reflected from the under and western side of cirro-stratus. Again, on May 21, 23, 29, 30, 31, and June 1. The last was peculiar, not only as being the most lurid, the cloudscape being marvellously fantastic, but, dying away at 21h., it revived faintly at 21h. 18m. to 21h. 30m., and again from 22h. to 22h. 20m., of a decided rose-colour on western side of roll-cumulus coming up from east-north-east. Thursday, Friday, and to-night there is no glow; overcast and oppressive just now; a little rain fell in forenoon. The glow reminds me, on a more intense scale, of that previous to January 26, 1884, and again on December 8 last year.

From May 21, until to day, the weather has been genial and fine.

Faithfully yours,

LEWIS P. MUIRHEAD.

R. H. Scott, Esq., Meteorological Office, London.

Zirconia.

SOMEHOW I overlooked for a few days the letter of Messrs. Hopkin and Williams, which necessitates a brief reply, since they have confused (I am sure from mere haste) two samples, one of which I never had, and a correspondence most of which took place after what I had recorded.

Briefly, these are the facts. I was informed by Mr. T. Bolas that I could obtain "pure zirconia" of Messrs. Hopkin and