

cases that an effect is found to have clung with so much persistence to one sex, I am inclined to believe that, upon the experiment being made as I have suggested, that the other sex will produce similar results in regard to the numerical proportion of the sexes, and a strong point in favour of this opinion lies in the fact that, as I have myself seen, a sandy-coloured ♂ kitten, apparently bearing the stamp of the normal ♂ parent, was found to bear the development of the supernumerary digits in a marked degree.

WILLIAM WHITE

55, Highbury Hill, N., November 22

Algebraic Notation of Kinship

WITH reference to Mr. Davison's letter in NATURE (vol. xxiv. p. 571), I wish to point out that the subject of algebraic notation, not only for kinship, but for kinship and affinity, has been pretty fully discussed in several papers which I contributed to the Royal Society of Edinburgh, and especially in a paper entitled "Analysis of Relationships of Consanguinity and Affinity," which, at the request of Mr. Galton and Dr. Tylor, I contributed to the Anthropological Institute (*Journal of the Anthropological Institute*, August 1882). Some idea of the nature of that paper may be got from a statement of the several tables which are appended to it. Table I. gives the notation for the general relations of the first five orders, states the general and singular meaning of each, and classifies them according to index, sign, and grade. Table II. shows how these general relationships are divided into ultimate species. Table III. gives all the possible relationships of a man to a woman, and of a woman to a man, within the first five orders; and such relationships as exclude marriage according to the laws of England are marked with an asterisk. Table IV. gives the consanguineous relationships of the first five orders grouped in lines and species, the agnatic system being formed by the extreme terms on the left, and the uterine system by the extreme terms on the right. Table V. gives strict definitions of the English terms of relationship.

Besides the algebraic notation, I also developed a graphical notation. In the paper referred to, I apply the graphical notation to show the descent of property according to the English law.

Prof. Jevons took much interest in these papers, and it was his intention to give the elements of the analysis in a new chapter of his "Studies in Deductive Logic," but death snatched him from us in the midst of his scientific labours.

ALEXANDER MACFARLANE

University of Texas, Rustin, Texas, November 15

Seismometry

IN the last number of NATURE (p. 75) there appears a letter by Prof. J. A. Ewing, referring to a note in a previous number (p. 36), apparently a summary of a communication from Prof. Milne. As I have some interest in this question, and have reason to believe from remarks made in a letter lately received from Prof. Milne that the matters referred to by Prof. Ewing cannot be those to which Prof. Milne referred, I should be glad if the original communication could be published.

Prof. Ewing's letter and indeed several of his recent publications, including the description of his instruments in NATURE, are decidedly calculated to mislead those not familiar with the seismological work which has been done in Japan. For example, he says, or leads one to infer, that he introduced horizontal pendulums in seismology: now that is not the case. It is needless for me to say that horizontal pendulums have long been known as a means of obtaining nearly neutral equilibrium; and in particular, with reference to Japan, they are referred to by Prof. Milne on page 25 of vol. i. part 1 of the *Trans. Seis. Soc. Japan*, in a paper which was read in Prof. Ewing's presence several months before Prof. Ewing's instrument was heard of. What Prof. Ewing did introduce was a particular form of horizontal pendulum, very particularly described by him in some of his early papers, as involving a "new principle" (now apparently abandoned by him), and he used two such pendulums to write two components of the earth's motion on a *continuous y* moving plate. Records on moving surfaces were not new then, even in Japan, as they are referred to in papers published by other investigators before Prof. Ewing arrived in the country, but there was this difference in these older methods, that the plates were automatically started by the earthquake; and Prof. Ewing, after his experience, has now adopted this plan.

Prof. Ewing mentions also in his letter that his apparatus writes three components of the motion, but he does not say that the most difficult of the three—namely, the vertical component—is written by an instrument which I introduced and described before the Seismological Society of Japan, first in May 1880, and afterwards in a modified form in April 1881. Prof. Ewing's instrument is professedly, as his first description (*Trans. Seis. Soc. Japan*, vol. iii.) clearly shows, a modification of my second form, and is, what he seems persistently to have shut his eyes to, almost identical with my early form.

As to Prof. Ewing's statement in the last sentence of his letter that "there is nothing better to take their place," we can hardly be expected to take *his* judgment on this point.

THOMAS GRAY

7, Broomhill Avenue, Partick, Glasgow, November 30

[Nothing essential was omitted from Prof. Milne's letter.—ED.]

Botanical Lecture Experiment

THE following simple lecture-experiment may interest teachers of botany. It is described by Georg Klebs in his paper "Ueber d. Organisation d. Gallerte bei einigen Algen u. Flagellaten," published in the most recent part of *Unters. a. d. bot. Inst. z. Tubingen*. A description of the experiment I give in Klebs's words, translated:—"It is easy to demonstrate, by addition of a watery solution of phenolphthalein, that Algæ make the water in which they live alkaline when they are fixing carbon in light. In proportion as the fixation of carbon proceeds, the water gradually assumes a deep red tinge, which gradually disappears when light is excluded." The explanation given is:—"The Alga takes up not only the CO₂ absorbed in the water, but also in part that which is in combination in acid carbonates, in consequence of which alkaline combinations arise; in darkness, owing to respiration, the reverse process takes place."

I have a vessel with water containing phenolphthalein in which *Cladophora* has grown for nearly three weeks, and there is daily a reddening of the water, its rapidity being determined by the brightness of the day; during the night the colour disappears.

BAYLEY BALFOUR

A Lecture Experiment on the Expansion of Solids by Heat

MR. MADAN's description of a device for showing that metals and solids expand when exposed to heat is very interesting, especially as such an arrangement, but with important modifications, is capable of giving very excellent scientific results, results which are only surpassed by M. Fizeau's method. One necessary alteration is the substitution of a spring-pressure for the weight on the strip of metal. This and other points will be made quite clear by a perusal of a short description contained in my paper, "A Strain-Indicator for Use at Sea," read before the Institution of Naval Architects. The numerous tables and diagrams there given would, I am afraid, hardly interest your readers, but the repeated experiments in Table I. would be a subject of interest, as they show how well the experiments agree amongst themselves. The errors, though small, are due, in my opinion, not only to the difficulty of reading the dial (each unit being equal to about half an inch, and the second decimal therefore about 1/200 inch), but also to the difficulty of reading the exact position of the weight on the steel-yard of the testing-machine. Far more accurate results are obtained when, instead of a jockey weight being run out, small weights are added one by one.

You will also notice that the instrument gives very good records on paper (see launching strain diagrams and railway bridge diagrams), and in this shape it could, I think, be used with advantage for recording changes of temperature.

C. E. STROMEYER

Strawberry Hill, Middlesex, December 2

Meteors and Auroras

IN the *Proceedings* of the Paris Academy of Sciences published in NATURE for November 4, at p. 23, a relation between showers of shooting-stars and auroras is noted. In this vicinity on April 14, May 8, July 27, and November 2, very fine auroras were visible, and upon each occasion shooting-stars of unusual brilliancy were observed in the northern heavens whilst the aurora was at its height.

M. A. VEEDER

Lyons, New York, November 24