

been overlooked. More elaborate hypotheses may be needed, but not until the simpler have been disproved.

Grantchester, Cambridge, April 10. W. BATESON.

P.S.—A reviewer declares (NATURE, April 9) that the data in this case are “by no means easy of interpretation,” on what hypothesis I know not; and that “much of the evidence is *primâ facie* in favour of ancestral inheritance.” It is scarcely too much to state that in each set of matings the distribution (1) of pink and dark-eyed, (2) of coloured and albino coats, (3) of “waltzers” and non-waltzers, is in punctilious agreement with Mendelian prediction. The variety of colour in the first cross I have dealt with. Knowing something of the recent history of fancy mice, two kinds of grey in this generation cause me no surprise. In the whole evidence I can find only three real difficulties, all surely of minor importance. One is named in my letter. The second is the occurrence of three dark-eyed *fawn-yellows* in the offspring of first crosses. The third is the scarcity of yellows in the offspring of hybrids \times albinos. If the individuality of the parents were declared, two, perhaps all, of these points could be cleared up. I am not acquainted with any other conception of heredity which elucidates any part of the facts.

Experiment to Illustrate Precession and Nutation.

THE following account of a simple experiment may be of interest to some of the readers of NATURE. The common peg-top and tee-totum are commonly referred to as affording a good example of the phenomenon of precession. I do not think that it is generally known that the motion of nutation can be beautifully shown by the same simple means. Sir John Herschel says in his “Outlines of Astronomy” that the motion of precession can be shown by “that amusing toy, the te-to-tum, which, when delicately executed and nicely balanced, becomes an elegant philosophical instrument.” If, however, the tee-totum is not perfectly balanced we have realised the conditions for showing nutation also.

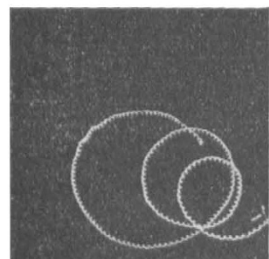


FIG. 1 — Trace made by imperfectly balanced watch wheel spinning on its axis, illustrating precession and nutation.

If the earth were perfectly homogeneous and undisturbed by any outside irregularity, there would be no nutation. In the same way a tee-totum will not exhibit the motion of nutation if it be perfectly balanced. When, however, one side is made heavier than the other we obtain the phenomenon of nutation. The magnitude of the nutation increases with the extra weight. A series of experiments was made by spinning

a small clock wheel on its axis. The best way to see the result is to spin the wheel on a white plate which has been smoked. The trace thus obtained may be studied perfectly. In order to get a permanent record, the wheel was made to spin on a piece of clear glass which had been slightly smoked. The record thus obtained may be used as an ordinary negative, and prints obtained on sensitive paper in the ordinary way. With a little care very beautiful and instructive results may be obtained. The little apparatus may also be projected on the screen, and the actual formation of the curve exhibited.

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Distribution of Pithophora.

IN October last, I found an old-established paddy-field near Tanabe, the bottom of which, to the extent of several tens of feet every way, was luxuriantly grown with the *Pithophora Oedogonia*, Wittrock, var. *Vaucherioides*, Wolle, with resting spores yet incompletely formed. The locality is some sixty miles south of Wakayama Shi, where I had gathered the same with full spores, October, 1901 (see NATURE, vol. lxi, pp. 279, 296). The occurrences of the alga in such distant places seem to prove that it is indigenous to Japan. The Floridan specimens I collected in 1891-92 were with spores mature in the months of June and July.

KUMAGUSU MINAKATA.

Mount Nachi, Kii, Japan, March 10.

NO. 1747, VOL. 67]

PEDIGREES.

THE trouble of compiling pedigrees and their unmanageable size led me to devise a method of recording relationships in a form suitable to my own particular wants. As it promises to answer exceedingly well, and to be of more extended utility, I venture to publish it.

The system of relationships between those who live or have lived in a long-established community is wide in extent, of indefinite depth, and interlaced in all directions. The problem is how to arrange its records so that when any individual is selected as a point of departure, it shall be easy to trace his relationships in every direction, whether ascending, descending, or collateral, so far as materials exist. The representation of such a system is wholly beyond the powers of a chart, but its object can be attained by breaking it up into what will be called “Family Groups,” each of which slightly overlaps those with which it is immediately connected. A family group, in the sense used here, consists of (1) a parental couple, (2) all their sons and daughters, (3) the wives and husbands of them. Their names are supposed to be written on one page of a register, and the group, as a whole, to be defined by the No. of that page. The group is also defined and indexed under the joined surnames of the parental couple. I subjoin three specimen groups, but in a much abbreviated form for the sake of compactness,

Family Groups.

John Gore.		16 Feb.	31	101
Amy Myers.		24 Mar.	43	
Fred. Gore	101	Mary Drew	144	205
George Gore	101	Jane Boyle	136	211
Ellen Gore	101	John Piers	105	237
Susan Gore	101	Unmar.	—	—
Steph. Gore	101	Unmar.	—	—
Fanny Gore	101	Harry Pitt	163	223
George Drew.		14 Jan.	51	144
Eliz. Patten.		3 April.	62	
Harry Drew	144	Rose Spry	123	315
Mary Drew	144	1. Fred. Gore	101	328
“ “	144	2. George Lewis	165	340
Fred. Gore.		26 Nov.	101	205
Mary Drew.		4 Oct.	144	
Frank Gore	205	Anne Fox	218	340
Amy Gore	205	James Moss	265	344
Anne Gore	205	Unmar.	—	—
Alex. Gore	205	Eva Sully	241	370
Rose Gore	205	Steph. Bell	270	315

only half a line being allotted to each individual. In reality, a short paragraph of full-length lines would be used, to admit of the entry of long names, and of such details as are commonly inserted in pedigrees. Taking group 205 as our subject for explanation, it will be observed that each of the five members of the fraternity—Frank, Amy, Anne, Alex. and Rose—bear the same register No. of 205, which defines that group. The justification for indexing them in the same group lies in the solidarity of each fraternity,