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.]

Australian Kinship.

IN a note which appeared in NATURE of April 1 *à propos* of my paper on terms for human relationships (British Academy), the writer suggested that our knowledge of Australian society was still very incomplete. Even as to Arunta rules and customs, he said, our informants differed greatly in their reports. There is now reason to suppose, however, that our informants, Messrs. Spencer and Gillen, and, later, the Rev. Mr. Strehlow, are not really at odds. The impression that they disagreed was caused by some letters of Mr. Strehlow in *Globus* and elsewhere; but now that he has published two parts of his "Die Arunta und Loritja-Stämme" (Frankfurt: Baer and Co., 1907, 1908), it becomes clear that he has merely studied branches of the Arunta "nation" not within the range of the work of Messrs. Spencer and Gillen, and that his natives differ, not only in customs and beliefs, but more or less in language, from those of the English explorers.

The differences are matters of detail; the broad outlines of custom and myth are identical. I ventured to express this opinion in *Man*, and was confirmed in my view by finding that it is held by Mr. N. W. Thomas ("Folk-Lore," March 30, 1909). He writes that Mr. Strehlow's second volume "confirms the belief that local differences of considerable magnitude exist, not only in belief, but also in social organisation."

In all probability both Messrs. Spencer and Gillen and Mr. Strehlow are right as regards the natives whom they have studied. Mr. Strehlow's full knowledge of the languages or dialects makes his book "masterly," as Mr. Thomas says, but the book does not invalidate the results of the English inquirers. An English translation would save trouble to readers in this country who are not too familiar with German. A. LANG.

Forms, Markings, and Attitudes in Animal and Plant Life.

THE object of this letter is to suggest what I may call a collateral theory of mimicry, and not in any sense a complete theory. It is based upon facts or groups of facts, many of which are very well known, but all of which have passed under my own observation.

Notwithstanding the great variety of form in leaves, there is general agreement as to the primary character of a simple ovate leaf, and the bi-facial form of the leaf is in obvious correlation with the great functions of transpiration and assimilation. The bi-facial leaf-like form of the leaf-insect (Phyllium) is not in correlation with any such essential metabolic functions, but it is correlated with the mode of life of the insect. The expression "mode of life" is sufficiently vague; it represents the combination of physiological reactions which make up the outward life of the animal. What these reactions are cannot always be stated in precise language, and until they can be so stated our knowledge has not advanced very much in regard to a particular case.

The cryptozoic habit of so many animals is the expression of reactions which may be conveniently classified together under the term cryptotaxis. Thus the concealment afforded by protective resemblance is one example of this general tendency; living under logs, or bark, or below the surface of the ground is another. Prof. Loeb, as I understand him, has attempted to throw discredit on this tendency in so far as he reduces it to a manifestation of stereotropism ("The Dynamics of Living Matter," 1906, p. 157); but stereotropism may, and obviously does, coexist with cryptotaxis, as may be verified any day in the behaviour of snakes, land-leeches, and land-planarians.

The leaf-butterfly (Kallima) also admirably lives up to its name, but in a different sense; for, whereas Phyllium has a dorsoventrally flattened body, Kallima has a normal body, and resembles a leaf only when at rest with closed wings. The pupa of another butterfly, *Troides darsius*,

resembles a crumpled yellow leaf; but it is not only amongst insects that we find leaf resemblances. It occurs also amongst fishes. Besides the extraordinary case of Phyllopteryx, the young sea-bat (*Platax vespertilio*) resembles a simple yellow leaf, the dorsal, ventral, and anal fins assisting to form the contour line, while the caudal fin is glass-clear (*Spolia Zeylanica*, ii., 1905, p. 51). Drifting yellow leaves which have fallen from mangroves and other maritime trees are common enough in the sea and backwaters.

Animals which resemble the same thing resemble one another; but whereas the resemblance of a leaf-fish (Platax) to a leaf is a real resemblance, advantageous to the fish, its resemblance to a leaf-butterfly is accidental, and of no value to either. The important fact is their common possession of a fundamental form, namely, that of a leaf.

Of other forms which are widely distributed amongst different families, orders, and even classes, I may mention the ant-form and the tadpole-form, without going into further particulars.

With equal brevity allusion may be made to familiar markings, widely distributed without reference to mutual resemblances, but conforming to common physiological reactions. Such, for example, are longitudinal stripes or bands, transverse bars or rings, bright spots on a dark ground, dark spots on a pale ground, &c. In all such cases I suggest that the primary fact is the conformity to a fundamental pattern, which is itself the expression of a pigment-reaction, the causes of which have not yet been reduced to a definition. Any advantage which this conformity to a common standard may confer is a secondary factor which may conduce to the preservation of the species by natural selection.

Lastly, with regard to attitudes there is much to be said, but I must be brief. One of the most telling examples of general conformity of attitude is the bi-pedal posture of all birds, some reptiles, and many mammals.

The little palm-squirrels (*Funambulus*) and tree-lizards (*Calotes*) are often seen associated together on the same tree, and it is therefore the more noticeable that they have in common a singular habit of remaining in one spot with the fore-body somewhat raised, and then jerking the fore-body up and down several times in rapid succession whilst clinging to the trunk or branch of a tree. I do not know what the precise significance of this bobbing movement may be, but they both practise it.

The only other attitude which I desire to mention is the vertical attitude assumed by some fishes. Some years ago I described and published an ideal picture of the vertical swimming attitude of *Amphisila strigata* (Zoological Results, part vi., 1902, p. 719). More recently the late Mr. W. Saville Kent told me that he had seen the same thing, and had kept the fish in an aquarium, whereas I had only seen it from a boat, swimming in a small shoal in the sea. I was glad of the confirmation of the vertical attitude; but upon showing my figure to Mr. Saville Kent, he pointed out to me that the head is not directed upwards, as there represented, but downwards, as if to feed from the bottom. What I saw were swimming in mid-water, and as the body has a pronounced amphioxine form, it was impossible to be certain which end was uppermost. This uncommon vertical attitude, with head directed downwards, is not without parallel amongst fishes, having been observed by Dr. Abbott in the case of the "mud sunfish" (*Acantharchus bomotis*) in 1884. ARTHUR WILLEY.

Colombo, Ceylon, April 4.

The Simple Equivalent of an Alternating Circuit of Parallel Wires.

IN NATURE of January 30, 1908, some results were quoted by me with reference to the effective inductance of two long parallel wires when the change of current distribution due to frequency is taken into account. These were extended later (*Phil. Mag.*, February, 1909) to meet the case in which the wires are very close together. Pending more detailed publication, the following developments and extensions may be of interest from the practical point of view, as they do not require the construction of special