

more specific, he will find that in his phrase "If . . . I am a redevelopment of the characteristics of some former individual from a piece of his body," the words "I" and the group of words "characteristic of some former individual" exactly cancel each other and leave an intellectual blank, just as do the words "cubical" and "spherical" when the attempt is made to apply them to one and the same body. That is to say, despite the splendid combination of breadth of outlook and ability as a laboratory methodologist and technician which distinguishes Jennings as a biologist, his address at this point is subject to the same miscarriage of reason that has characterized nearly all modern speculative thinking on the Mendelian type of inheritance. The miscarriage to which I refer arises from neglecting the technical detail of noticing that since there always is a strictly psychological or subjective element in the idea expressed by the term "characteristic," it comes about that the very construction of the sense-perceptual aspect of our knowledge is such as to make it utterly impossible for the truly *same* characteristic to belong to more than one body. This fundamental truth has been overlooked in speculative biology largely, I suspect, from failure to note that so far as the subjective side of perception is concerned, "characteristic" is exactly synonymous with "quality" and "property." Bearing this fact in mind, the situation clears up readily when we turn to the familiar practical (not, generally, the theoretical) language of chemistry. The working chemist never for an instant thinks of trying to express or "explain" the characteristics, or properties of hydrogen in "terms of" the characteristics of oxygen, for he knows perfectly well that were he able to do such a thing there would be no such gas as hydrogen, for all hydrogen would be oxygen. There is no doubt in the world, as one sees if he looks at the case closely, that most of the recent effort to "explain" the adult organism in terms of the germ cells has involved just the self-destructive fallacy that the chemist would be a victim of were he to try to explain

hydrogen in terms of oxygen. The fact that the adult organism develops from the germ cells while oxygen does not, so far as we know, develop from hydrogen, does not in the least affect the psychological fact that the adult is known by its own characteristics and in no other way, exactly as the germ cell is known by its characteristics and in no other way.

Once one sees clearly that this aspect of the problem of genetics differs *toto celo* from the problem of developmental potentiality, that is, the problem of how the germ cell is able to develop into the adult, he has gone a very long way toward a consistent, workable philosophy of biology.

In Jennings's sentence "if the phrase 'potential immortality' means anything for the infusorian, it means exactly the same for me, so far as we can judge from past history," I find encouragement for the hope that he will be willing to give my principle of standardization a good testing.

WM. E. RITTER

MARINE BIOLOGICAL STATION OF SAN DIEGO,
LA JOLLA, CALIFORNIA,
January 4, 1912

THE CHESTNUT TREE DISEASE

TO THE EDITOR OF SCIENCE: In connection with the chestnut tree disease mentioned in SCIENCE of December 29, 1911, and in preceding numbers, the writer calls attention to the hardy giant chinquapin (*Castanopsis Chrysophylla*) of the Pacific states. This may be a resistant species adaptable to the southern states. It occurs in two varieties, the one just mentioned and a dwarfed variety. The former reaches a height of 120 feet and has a diameter of from 8 to 10 feet; ordinarily from 40 to 55 feet in height and from 1 to 2 feet in diameter. Locality, near Willets in Mendocino County, Cal. The dwarfed form is abundant in the Cascade and Sierra Nevada and San Jacinto mountains from 2,000 to 9,000 feet. It is mostly of shrubby habit, but to all appearances identical with the giant chinquapin. This latter is a hardy and long-lived evergreen of stately and handsome

form. The timber is suitable for many purposes, saws readily, is fine grained and light brown. The burr and nut of both varieties are almost identical in size and appearance with the eastern chinquapin. They are difficult to obtain and are frequently attacked by a small whitish worm, the egg of which is deposited, as in the eastern chinquapin and chestnut, by a moth.

The writer suggests that the giant chinquapin be experimented with as a possible resistant species to reforest the eastern states devastated by the chestnut tree disease. The tree would probably stand the eastern conditions south of Maryland. The shrub is extremely hardy.

MARSDEN MANSON

SAN FRANCISCO, CAL.,

January 8, 1912

AN UNUSUAL EFFECT OF A LIGHTNING DISCHARGE

THE following note made by the writer under date of July 18, 1911, may be of interest: On the land of J. M. Dunklee (of Hawes postoffice, Ark.), in the N.E. $\frac{1}{4}$ of the N.E. $\frac{1}{4}$ of Sec. 11, T. 2 S., R. 20 W., the lightning struck an oak tree (according to Mr. Dunklee three years ago), much shattering it. The tree stood near the top of a sandstone ridge. The discharge passed to the roots of the tree, then followed in the ground down the north slope, tearing out a trench in places 3 feet wide, and which must at first have been $2\frac{1}{2}$ feet deep. At this time, the depth is $1\frac{1}{2}$ feet. The discharge followed down the slope 50 feet, tearing up the sandstone and throwing one block that is estimated to weigh 1,200 pounds up into the air and out of the trench. At the lower end of the trench, the discharge apparently passed beneath the surface, along a bedding plane between the upturned layers of sandstone. There is no evidence of any fusion of the rocks or the soil.

A. H. PURDUE

FAYETTEVILLE, ARK.,

January 10, 1912

"MISUSE OF THE TERM 'GENOTYPE'"

TO THE EDITOR OF SCIENCE: If the distinguished students of genetics whose communi-

cations have recently appeared in your pages do not imagine that their work is of interest to biologists and naturalists at large, then one is entitled to question their claim to so much of your space. Let them, one might say, confine their "terminological inexactitudes" to their own technical periodicals. If, however, they believe, as I do, that their highly valuable work should appeal to all biologists, and that it has a particularly important bearing on the methods and conclusions of the systematist, then surely they should try to avoid the use of terms that are liable to mislead the general naturalist, and that sooner or later must clash with those of the taxonomic biologist. But assuming that they persist in acting as though their work were either unworthy of general attention or far above the heads of all outside their charmed circle, still may one not appeal to them to recognize that serious writers in SCIENCE are at any rate their scientific colleagues, and as such have a claim to be treated with ordinary courtesy? To state, after what has been written, that Dr. Johannsen is the "originator of the word genotype" is to give either the cut direct or the lie direct to a fellow-worker.

F. A. BATHER

LONDON, ENGLAND,

January 17, 1912

SCIENTIFIC BOOKS

The Animals and Man. An Elementary Text-book of Zoology and Human Physiology. By VERNON LYMAN KELLOGG. New York, Henry Holt and Company. Pp. 495.

The present trend in high schools toward a combined course in human physiology and zoology is calling forth its inevitable train of new text-books, of which the present volume by Professor Kellogg is one. Knowing the writer's practise in text-book preparation and his wide experience as a teacher and a zoologist, one is justified in looking for something exceptional in this new effort, but the reviewer must confess to a feeling of disappointment on reading the book. It has the appearance of having been hastily constructed with a somewhat too liberal use of scissors and paste on