variations in displacement, its distribution of the throw over several near-lying and generally parallel planes, and, finally, the general persistence with which the zone of dislocation adheres to a definite course.

The object of this reply is to make clear that with the exception of the minor differences above referred to, the theses which Professor Davis has defended in his review, are just those which I have myself set up in the report reviewed, as well as in some other papers upon structural geology.

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July 22, 1907

RAILWAY SIGNALS

TO THE EDITOR OF SCIENCE: By some inadvertence Dr. J. W. Baird, of the University of Illinois, in criticizing a recent article of mine on "Railway Signals," in the *Century Magazine,* has attributed to me the belief that the human retina at night is color-blind; and he wonders how, according to my doctrine, an engineer ever distinguishes his color signals at night. As a matter of fact, I distinctly state, in the very article he criticizes, that at night the eye is *not* color-blind: "Colors are readily seen at night if they are intense enough."[1] The passage of mine which he quoted speaks explicitly of *faint* lights; for the signal-lights, bright enough in themselves, often become faint by distance, fog, smoke or storm. And of faint lights it is demonstrably true, as I said, and as every careful student of the subject knows, that the eye "no longer detects their proper colors."

2. As to the relative sensitiveness of the outlying portions of the retina for color and for form, it should be said that at a certain angular distance from the fovea a red danger-light can appear "white"—a common sign of safety. But in my own case I can easily distinguish correctly a horizontal from a vertical line, still farther off to the side. And even when, with greater angular distance, the direction becomes obscure, I find no tendency in a line-signal to appear to be its very opposite, as in the case of certain color-signals. So far as the practical problem of signaling is concerned, therefore, it seems probable that indirect vision would be less likely to cause disastrous misperception of a line-signal than of color; and that Dr. Baird's contention here is not *stichhaltig.*

3. The fact that some illuminated semaphores have failed would hardly seem to justify the judgment that what I recommend is "antiquated" and a failure. As I shall attempt to show elsewhere, there is an essential difference between the long line of lights which I propose for signaling, and the devices that have failed.

4. Dr. Baird charges me with promulgating the "erroneous conception" that there are individuals weak in their color sense but by no means color-blind; and declares that "several thousand cases of 'color-weakness,'" examined by Nagel, of Berlin, turned out in every instance to be color-blind. This is certainly astonishing. For Nagel himself, in the very latest issues of his journal,[2] affirms that he has found many cases of markedly weak color-sense that were *not* color-blind *at all.* He finds the color-weak to be usually "anomalous trichromates"; but quite recently he has examined carefully a person who showed in a pronounced way the characteristic marks of color-weakness (Farbenschwäche), and yet was not even "*anomal.*" Except for the color-weakness, his color-system was the normal "three-color" system. The "popular" and "erroneous" conception that there are color-weak persons who are not color-blind, seems thus destined to continue.

It is the more striking that these misrepre-

[1] "Railway Disasters at Night," *The Century Magazine,* May, 1907, p. 120, col. 2.

[2] *Zeitschrift für Sinnesphysiologie,* Vol. 41, pp. 250 f.; Vol. 42, pp. 65 ff. Could Dr. Baird's "several thousand cases of 'color-weakness,'" all proved by Nagel to be color-blind, have perhaps been drawn from the following passage in Nagel? —"*Among many thousand persons whose color-sense I have investigated, I have found not a single instance of markedly weak color-sense that did not on closer examination turn out to be an anomalous trichromatic color-sense.*" (Ibid., Vol. 41, p. 251). It is perhaps needless to add that "*di*chromatic" would have been used by Nagel had he meant (even partially) color-blind.

sentations, not of myself alone, but of Nagel and of the present state of color-investigation, should appear in a communication devoted to exposing the scientific mistakes of the popular magazines.

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SPECIAL ARTICLES

DIEMICTYLUS OR NOTOPHTHALMUS AS NAMES OF A SALAMANDER

The very important work of Dr. Leonhard Stejneger on the "Herpetology of Japan and adjacent territory" has just been published, and among the many interesting points raised (and mostly satisfactorily settled) is one respecting a genus represented by very common American salamanders. The genus variously called *Diemictylus,* or *Notophthalmus,* being represented by a couple of Japanese species, is adopted with the first name. It is said, "Derivation and meaning obscure. Two derivations suggest themselves, namely, *διαμυκτος*, from *διαμιγνυμι*, or *δι-ήμικοτλοσυ*, but the application of neither is obvious." The deduction is undoubtedly correct and my familiarity with names coined by Rafinesque and his methods in doing so enable me to give an explanation.

Rafinesque (1820), in his Annals of Nature (p. 5), claims that his *Triturus viridescens,* type of *Diemictylus,* has "the posterior [feet] with only three toes and two lateral knobs." The name evidently is intended to allude to this character and is badly condensed from *δις*, twice, *i. e.,* two, *ήμι-*, half, and *δακτυλος*, finger, the "two lateral knobs" being considered as half-toes. An analogous contraction is Rafinesque's *Decactylus,* curtailed from *δεκα*, ten, and *δακτυλος*, finger.

Dr. Stejneger has not given any reason for his preference of *Diemictylus* over *Notophthalmus,* but he may have some unknown to me. I have, however, always regarded *Notophthalmus* as the proper name. Rafinesque named both in the same article and on the same page (5), *Diemictylus* on line eight and *Notophthalmus* on line twenty-six. The characters assigned to both are worthless. It was open to any later naturalist to adopt either name. S. F. Baird, in 1850, in the *Journal of the Academy of Natural Sciences of Philadelphia* (N. S., I., 281, 284), recognized that both *Diemictylus* and *Notophthalmus* were based on the same form and preferred the latter name. This, so far as I know, was the first use by an original investigator of either.

Edw. Hallowell, in 1858, in the same journal (N. S., III., 362), substituted *Diemyctylus* (changed from *Diemictylus*) for Baird's *Notophthalmus.* In this course, he was followed by Cope and other American zoologists. J. E. Gray, however, followed Baird in accepting *Notophthalmus.*

Cope (1859) preferred "*Diemyctylus,* though unmeaning, to the egregiously inappropriate *Notophthalmus* of the same date." On the contrary, I consider that *Notophthalmus* is very appropriate for the type species which is distinguished by the ocelliform dorsal spots, figuratively known as eyes, in accordance with many similar cases.[1] It is also well formed and euphonious. Perhaps Baird was influenced in accepting the name for these reasons as well as because the character connected with it ("toes of the fore feet free and unequal") was less inappropriate than that associated with *Diemictylus* ("fore feet semi-palmate with four *equal* toes"). However this may be, *Notophthalmus* should be retained unless Dr. Stejneger knows of an earlier use of *Diemictylus.* We are both obedient to the same rule which provides for such cases, and which has guided him in the same work, a few pages farther on (p. 25) in accepting *Hynobius* rather than *Pseudosalamandra.* We have cause to be thankful for being freed from such a barbarous compound as *Diemictylus.*

Naturalists are to be congratulated because Dr. Stejneger has very satisfactorily accounted for the etymology of *Ambystoma* (p. 24). He has also accepted "the shorter form" for the names of families based on components ending in *stoma,* as "Ambystomidæ for Amblystomatidæ." I have always preferred this course.

Theo. Gill

[1] *E. g.,* eyes of the peacock's tail.