

ensis (p. 68) Senegal; *Lanius mackinnoni zenkerianus* (p. 69) South Cameroon; *Andropadus ansorgei muniensis* (p. 70) Spanish Guinea; *Hirundo griseopyga gertrudis* (p. 72) Adamaua.

Stresemann describes (p. 81) *Luscinia brunnea dendrobiastes* from Szetschwan.

Ornithologische Monatsberichte. 32, No. 4. July–August, 1924. [In German.]

Stresemann describes *Hieraaëtus kieneri formosus* (p. 108) North Celebes; and *Accipiter minullus sassii* (p. 109) Beni north of Lake Albert Edward.

Der Ornithologische Beobachter. XXI, No. 8, May, 1924. [In German.]

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CORRESPONDENCE.

Photoperiodism in Bird Migration.

Editor of 'The Auk':

No doubt very many of your readers have shared my interest in Mr. Eifrig's discussion of the question "Is Photoperiodism a Factor in the Migration of Birds" (Auk, 1924, XLI, 439). The idea that the seasonal variations in the length of daylight may act as a stimulus to migration has often been put forward, but a further exposition of it is welcome. Ornithologists must be grateful to Mr. Eifrig for drawing their attention to recent botanical evidence as to "photoperiodism" and to the possible existence of an analogy in the case of birds. At the same time they will be cautious about arguing from analogy alone, and will realize that in the absence of more direct evidence the theory as applied to avian migration is purely speculative.

If I may venture a friendly criticism, it is that Mr. Eifrig tends to obscure an important distinction when, for example, he speaks of "compelling" and "controlling," or of "driving" and "regulating," as if they almost necessarily went together. Surely it is essential to distinguish between ultimate causes and immediate stimuli? I may perhaps be allowed to state this point more fully.

In the first place it is desirable to notice that the migration habit obviously serves certain ends which are of advantage to its possessors. In very general terms these are the exploitation of the summer opportunities of high latitude on the one hand, and the avoidance of their winter rigours on the other. But the mere existence of these advantages could neither have originated migration as a habit nor create migration afresh each year: the end does not cause the means, and a thing does not happen simply because it is advantageous. The advantages may well, however, give the habit a "survival value."

This preliminary assumption being granted, the question of actual causation seems to have a dual aspect. The ultimate cause of migration must surely lie in the existence of the inborn habit and in the nature of the forces in the far past which gave it origin. In the second place there must be immediate stimuli, periodically recurring, which evoke the habit to active expression each autumn and each spring. We may liken the habit to an explosive charge in a cartridge, the ultimate cause to the hand