

### Migration and Periodic Accuracy.

EDITOR OF 'THE AUK.'

*Dear Sir:* — In Dr. John C. Phillips' highly interesting remarks on these topics (*Auk*, XXX, p. 202) he says "It would indeed be interesting if we could subject castrated birds to experimental conditions in order to test the strength of their migratory impulses, but this could hardly be accomplished."

It would be equally interesting if we could take species migrating northward for reproductive purposes, and subject them to a reversal of seasonal sequences, by introducing them into the southern hemisphere, and learn then what changes and variations of migratory impulses would follow.

Sometime ago the writer had occasion to make inquiries concerning the habits of introduced Cervidæ in New Zealand; the following letter (quoted only in relevant parts) from a well informed New Zealand Government Official came as a reply to these inquiries;

... "In reply to your question regarding the introduction of deer into New Zealand: — The first red deer presented comprised 12, which were the gift of the late Prince Consort to the Colony. These deer were bred in Windsor Forest. Six of them were shipped to Wellington and six to Canterbury in the year 1862, but three only were landed alive, one stag and two hinds. These were sent to Wellington and kept by the Government in a stable, and after the interest and curiosity of the inhabitants were satisfied, the three deer were put into a dray, and carted over the Tararua Mountains into the Wairarapa district where they were liberated, and from that trio there are now quite 12,000 deer in the vicinity. In addition to producing larger antlers than their progenitors in Scotland, they also increased very considerably in general bulk. Rutting occurs generally from about the 20th of March to the 14th of April. This is dependent very largely upon the weather. When the weather is cold, the rutting takes place early, but should it be very mild and warm it does not occur until about the end of March or first week in April. Calving occurs generally in October and November. The stags shed their antlers in November. The rutting, calving and shedding of antlers, as you will see, are exactly opposite to the time in which these processes occur in England. If you take the English dates and defer them for six months you get the same results as regards the red deer in New Zealand." . . .

It is highly probable that these facts concerning the definite reversal of time of rutting, etc., have already been published, yet if so, such publication has up to date escaped the writer's notice. The facts just quoted constitute a most striking exposition of the seasonal influence on biologic functions and nutritional processes of great magnitude and importance to the species in question. It is possible that parallel alterations in migration, including "periodic accuracy," ovulation, nesting, and incubation would

be found to result could one successfully transplant and keep track of birds of migratory species from the northern to the southern hemispheres, or vice versa. The writer's only excuse for calling attention in this ornithological publication to data bearing directly on mammals only, is that the data also bear indirectly on cognate processes in birds, and should be available for future investigators of migration, etc,

Very truly,

W. H. BERGTOLD.

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