on the luteotrophic influence of an embryo in the uterus for its continued maintenance as the corpus luteum of pregnancy.

The retrogressive changes observed in the corpus luteum of the non-pregnant sheep during the final stages of the cycle appear to be dependent on a continuous luteolytic effect from the uterus at that stage. The influence of the hypophysis on the relationship between the uterus and the corpus luteum is not yet known.

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R. M. Moor
L. E. A. Rowson

Agricultural Research Council,
Unit of Reproductive Physiology and Biochemistry,
Cambridge.

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Electroreception and the Ampullæ of Lorenzini in Elasmobranchs

Recent investigations of the sensitivity of certain groups of fishes to minute local potential changes have revealed the fact that all members of these groups possess specialized neuromasts in addition to their ordinary lateral-line organs. Whereas the ordinary organs are used as 'distant touch' receptors, responding to mechanical stimuli, several facts and considerations have led to the assumption that the specialized or 'ampullary' organs are used as electroreceptors[1]. The ampullæ of Lorenzini, which occur on the head of all elasmobranchs, are typical and important representatives of this latter group of derived lateral sense organs. Electrophysiologically, the ampullæ have been shown to respond to slight potential changes (1 μV/cm)[2]. On the other hand. behaviour experiments revealed the occurrence of muscular reactions in rays and dogfishes in response to equally minute or even weaker electrical stimuli (0·1 μV/cm)[3].

New behaviour experiments with *Scyliorhinus canicula*, in which local electrical stimulation of the animals was combined with surgical elimination of the ampullæ of Lorenzini by means of severing the nerves, have shown that the ampullæ may indeed be used as electroreceptors. Denervation of all ampullæ abolished all reactions to local potential changes from the threshold value up to the highest value tried (about 20 mV/cm). Local denervation of ampullæ caused a substantial rise of threshold for local electrical stimuli but only if applied to the region of the openings of the denervated ampullæ, even though the ordinary lateral-line organs and other skin receptors of the region concerned were left intact. These results represent the first clear-cut evidence for the use of ampullary lateral-line organs as electroreceptors, engaged in the perception of stimuli in the order of a few μV/cm. They will be published in detail in the *Zeitschrift für vergleichende Physiologie* (Volume 47).

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S. Dijkgraaf

Laboratory of Comparative Physiology,
University of Utrecht.

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Evidence of an Autonomous Reproductive Rhythm in an Equatorial Bird (*Quelea quelea*)

That photoperiod can influence the reproductive and migratory cycles of many species of birds is now well established[1]. In male birds the breeding cycle can be resolved into three phases[2]; the post-nuptial refractory phase during which testes regress and the anterior pituitary becomes unsusceptible to photostimulation; the acceleration or progressive phase when the bird is capable of being stimulated into gametogenetic activity; the final breeding phase. Some workers[3] have demonstrated in certain species that all three phases are capable of modification by manipulation of artificial photoperiods and claim that the entire annual cycle is regulated by day-length. But others[4] place more emphasis on an internal rhythm. In general, the experimental evidence indicates that photoperiods seem to be more influential on the breeding cycles of temperate zone species than on equatorial and desert birds[5].

The primary purpose of the investigation recorded here was to determine whether an equatorial bird, normally subject to very little fluctuation in day-length, possesses an autonomous reproductive rhythm under constant photoperiod and temperature conditions. For this purpose, red-billed diochs (*Quelea quelea*) were collected. These weaver finches range trans-equatorially over vast areas of Africa. They were flown to London and placed in cages under a 12-h photoperiod. Food was provided *ad lib.* and the room temperature was thermostatically controlled at 22° C. Their breeding biology has already been briefly reported[6], and a well-marked refractory period which is apparently independent of artificial photoperiodic fluctuations is known to occur[5].

The investigation started in September 1960 when birds were still in eclipse plumage but were starting to moult into their nuptial plumage. A few black feathers had appeared in the mask area giving a somewhat speckled appearance. Three specimens killed for autopsy at this time possessed testes 5 mm × 3·2 mm in size containing seminiferous tubules 120μ in diameter. Spermatogenesis had restarted and there were numerous spermatogonia and a few isolated primary spermatocytes. These were adult birds which had already been through a breeding season; within the tubules there was sudanophil material, the remains of the previous season's post-nuptial tubule metamorphosis[7]. Interstitial Leydig cells had become moderately lipoidal and cholesterol positive. The remaining specimens were laparotomized and the left testis measured *in situ*. Of these, 40 birds possessed gonads of the same average size as above, but in 10 specimens the testes were minute. These latter were juvenile birds with only partially ossified skulls and were removed from the experimental group so that there was uniformity of condition among the remainder. Histologically these juveniles possessed immature gonads with inactive germ cells and no lipid within the seminiferous elements.

A constant record was kept of size of testis by means of repeated laparotomies. The results shown in Fig. 1 represent the average testis size of the same 10 specimens throughout the 2·5-year investigation period. By December all the birds had moulted into full nuptial plumage and gonads had increased to 10·5 mm × 5 mm. Five specimens killed for histological examination were in breeding condition with seminiferous tubules swollen to a diameter of 250–350μ and filled with bunched spermatozoa. Intra-tubular lipid was now no longer present, and the Leydig cells had also discharged their sudanophil droplets.

As judged by *in situ* measurements, full breeding condition was maintained for some four to five months and was followed by a rapid regression of the testes. There was a variation of some two weeks between the time when gonadal regression was first observed and when the last