

the speed of swallows over big distances, such as 2,260 km. It should be borne in mind that the flight of the stork differs greatly from that of the swallow. The daily rates of progress did not vary to any great extent. The extremes vary: 165 km. for birds released in Bukarest and 188 km. for birds flying from Lydda.

The behaviour of the birds, when given freedom, was much the same and characteristic as a rule. They all took their time in cleaning and putting their feathers in good order, preparing thus for flight. Having taken to the wing, they circulated above the place where they had been set free for a time which varied practically with every bird, and then every bird took a proper direction for home.

As a result of these experiments we may, we think, regard it as a fact that some species of birds possess a special sense of orientation, which enables them to trace their homes from great distances without the help of kinesthetical factors. It is also not to be doubted that 2,260 km. in a straight line does not constitute the limit from which birds are able to find their homes.

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<sup>1</sup> *Acta Ornithologica Mus. Zool. Polon.*, 1, 8 (1934).

<sup>2</sup> *J. Ornithologie*, 85, 1 (1937).

#### Terminology of Sex Hormones

ONE hesitates to advocate the use of new words, even in a rapidly growing subject such as endocrinology, but obvious anomalies are becoming evident in the description of certain activities of the sex hormones, and there is good precedent for supposing that an improvement in terminology would not only be desirable in itself but also would help to clarify the position. One may recall, for example, that the introduction of the words 'oestrogenic' and 'androgenic' has done much to promote clear thinking and precision of expression. The application of the word 'oestrogenic' to the biological activities of oestrone, and 'oestrogen' to substances having oestrogenic properties, was of course due to the best-known property of the hormone, that of causing changes characteristic of oestrus.

These terms serve a very useful purpose, but it is now evident that they are inadequate. Thus the power of oestrogens to cause feminization of the plumage of birds, especially as hen-feathering is rarely cyclic in the female, can scarcely be called oestrogenic activity. I suggest, therefore, that the word *gynæcogenic* be used as a general term to describe activity which results in the production of the attributes of femaleness, and the word *gynæcogen* to describe a substance having such activity, oestrogenic and oestrogen being applied only to the production of oestrous changes. The capacity of many of the androgenic substances to cause growth of the uterus and mucification of the vagina would then indicate gynæcogenic activity, while *transandrostenediol*, which will cause actual cornification of the vagina, would also be oestrogenic.

Certain properties of oestrone, such as its capacity to correct the castration changes in the pituitary of the male rat, to cause fibrous development of the seminal vesicles or to cornify the uterus masculinus of the rhesus monkey, are difficult to include in any

terminology, though the first might be called androgenic activity, and the latter oestrogenic activity if the 'uterus masculinus' of the rhesus monkey is actually a vagina masculina.

A further point concerns the terminology of hormones which have both androgenic and gynæcogenic properties. There is a tendency to refer to such hormones as 'bisexual'. This seems unfortunate, because bisexual has a well-established biological meaning which is quite inapplicable to a chemical substance. Two standard works of reference define the word as meaning "having both male and female reproductive organs"<sup>1</sup>, and "having the reproductive organs of both sexes; hermaphrodite; also having sexual feeling for both sexes"<sup>2</sup>. In seeking a more suitable word to apply to a hormone, it may be recalled that Champy<sup>3</sup> introduced the word 'ambosexual' in connexion with plumage and other characters to imply "pertaining to both sexes", and Witschi<sup>4</sup> has used the word 'amphosexual' in a somewhat similar way. A more correct form of the word is apparently *ambisexual*, and it would seem that this could be applied with perfect propriety to substances, extracts and organs which exhibit activities pertaining to both sexes. Thus testosterone would be a hormone with ambisexual properties, possibly, though less correctly, an 'ambisexual hormone', while the testis and the ovary, each having potential endocrine activities related to the function of the opposite sex, would be organs with ambisexual activities.

Finally, reference may be made to 'gonadotropic', 'thyrotropic', etc., which have served a useful purpose for some years and now show signs of becoming indispensable. Burn<sup>5</sup> has recently pointed out that the suffix 'tropic', as used to indicate hormones which stimulate the growth of particular organs, is quite incorrect, and he has since suggested that 'trophic' would be much more suitable. It is clear that the alteration would effect a useful improvement in terminology with little or no trouble to writer or reader, and it is therefore desirable from every point of view. *Gonadotrophic* has already been used by certain investigators<sup>6</sup>, and I venture to hope that this form, together with *thyrotrophic*, *adrenotrophic*, etc., may become customary.

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<sup>1</sup> Henderson and Henderson, "Dictionary of Scientific Terms" (Oliver and Boyd, 1920).

<sup>2</sup> Dorland, "American Illustrated Medical Dictionary" (Saunders, 1935).

<sup>3</sup> Champy, Bulliard, Kritch, and Demay, *Arch. d'Anat. micr.*, 27 (1931).

<sup>4</sup> Witschi, *Bull. Soc. Biol. Lett.*, 5, 79 (1936).

<sup>5</sup> Burn, "Biological Standardisation" (Oxford Medical Publications, 1937).

<sup>6</sup> See for example, Tenney and Parker, *Endocrinology*, 21, 687 (1937).

#### Faraday on Electromagnetic Propagation

THE significance of Faraday's sealed packet of 1832, opened recently at the Royal Society, is not any potential claim for priority which would be quite foreign to his nature, but the remembrance of an episode of ten years earlier which continued to rankle; he was then suspected of having overheard a discussion at the Royal Institution laboratory about how to produce electromagnetic rotations, which put him on the track of his beautiful solution of that