

green fluorescence. In view of the apparent similarity of this synthetic phenol to the metabolic phenol *BPX*, and since *in vitro* the formation of the quinone preceded that of the phenol, Warren suggested that *BPX* might be a partially reduced quinone.

Previous work on the isolation of metabolic derivatives of benzpyrene has been hampered by the small yields of the products, due partly to their instability and partly to the small amounts produced. The latter was due, in the case of intravenous injection of benzpyrene, to the small amounts which can be injected by that route, and in the case of subcutaneous injection, to the slow rate of metabolic change under those conditions. From a study of the fate of benzpyrene in the animal body under different biological conditions⁶, it was found, however, that the body metabolizes benzpyrene about fifteen times more rapidly when injected intraperitoneally than when injected subcutaneously. By taking advantage of this difference, it became possible to investigate the nature of the metabolic products of benzpyrene on a more extensive scale.

The faeces of rats which had previously been injected intraperitoneally with large amounts of benzpyrene were desiccated, ground to a fine powder, and continuously extracted with cold benzene. On purification of the extract by chromatography, etc., it was possible to isolate, in addition to the phenolic product *BPX*, a red crystalline substance, possessing similar properties to the synthetic red quinone (5:8-) obtained by the method of Vollmann *et al.*⁷. On reductive acetylation or methylation, strongly fluorescent compounds with distinctive spectra were obtained, those derived from the synthetic quinone being similar in type to those derived from the metabolic quinone. They both appeared to be very different, however, from the acetyl and methyl derivatives obtained directly from *BPX*. This is in keeping with the conclusion reached by Chalmers and Crowfoot⁴ that *BPX* is a monohydroxy-benzpyrene, since, on acetylation or methylation, such a substance would be expected to yield the corresponding mono-derivatives, in contrast to the di-derivatives which may be expected from the quinones.

On the other hand, on standing in air (and, more rapidly, by treatment with oxidizing agents), *BPX* tends to change partially into the red quinone, a reaction which rather suggests that it is a dihydroxy-benzpyrene.

While further investigations are still in progress, the results so far available are not incompatible with the view that both a mono- and a di-hydroxy-benzpyrene are produced in the body, the former being slowly converted into the latter, and the latter being rapidly converted into a quinone.

I. BERENBLUM.
R. SCHOENTAL.

Oxford University Research Centre
of the British Empire Cancer Campaign,
Sir William Dunn School of Pathology,
University of Oxford.
March 21.

¹ Peacock, P. R., *Brit. J. Exp. Path.*, **17**, 164 (1936).

² Chalmers, J. G., *Biochem. J.*, **32**, 271 (1938).

³ Chalmers, J. G., *Biochem. J.*, **34**, 678 (1940).

⁴ Chalmers, J. G., and Crowfoot, D., *Biochem. J.*, **35**, 1270 (1941).

⁵ Warren, F. L., *Proc. Biochem. Soc., Chem. and Ind.* (in the press, 1942).

⁶ Berenblum, I., and Schoental, R., *Biochem. J.* (in the press, 1942).

⁷ Vollmann, H., Becker, H., Corell, M., and Streeck, H., *Ann. Chem.* **531**, 1 (1937).

Effect of Chorionic Gonadotropin on the Pouch of the Marsupial *Trichosurus vulpecula*

THE pouch of the sexually mature, non-pregnant common Australian phalanger or possum (*Trichosurus vulpecula*) shows a marked reaction towards the administration of gonadotropic hormone obtained from human pregnancy urine. The immediate response during the period of administration is a decrease in the size of the pouch, but after about three injections of 200–500 i.u., the pouch expands markedly within a few days after the final injection. The increase in size in the caudal direction extends down to the pubis; in the lateral direction the cavity may expand over the whole of the lower abdominal wall. In such cases the extended pouch would be capable of housing a large pouch young of about one eighth of the body-weight of the mother. With the expansion of the pouch, mammary glands and nipples also increase in size and the interior of the pouch becomes very moist due to the secretion of a fluid which at first is colourless and then turns brown. This enlarged pouch persists for about a week, then slow involution takes place extending over several weeks.

In comparing the action of oestrogens¹ and progesterone² with that of gonadotropin, it may be pointed out that oestrogens bring on a contraction, and progesterone, after a slight preliminary expansion, a relaxation and eversion, while gonadotropin brings on an enlargement of the pouch. It therefore appears that the same hormones may control the activities of the pouch and of the eutherian uterus.

A. BOLLIGER.

Gordon Craig Research Laboratory,
Department of Surgery,
University of Sydney.
Feb. 3.

¹ Bolliger, A., and Carrodus, A., *J. Roy. Soc. N.S.W.*, **73**, 218 (1940).

² Bolliger, A., and Carrodus, A., *J. Roy. Soc. N.S.W.*, **73**, 228 (1940).

Heterothallism and Reproduction in Fungi

WE are grateful for the clear genetical interpretation of heterothallism given by Dr. K. Mather¹, and may perhaps be allowed to carry his conclusions regarding reproduction in fungi a step further. We have been thinking on these lines for some time, and in a joint discussion held by Sections D and K at a meeting of the British Association in 1937, the suggestion put forward by one of us², that the heterothallism of some fungi might be compared with the incompatibility of some angiosperms, was not received sympathetically by the mycologists.

The evolution of heterothallism in fungi, a phenomenon not necessarily the outcome of sex, but possibly an independent and alternative process, has brought with it the problem of the bringing together of opposite strains: a problem intensified by the non-motile 'gamete' of the majority of fungi, and of peculiar importance in parasitic forms. Various mechanisms have been evolved which achieve this end, and it is in the interpretation and naming of these mechanisms that confusion has arisen between heterothallism and sex. The process whereby the