

further identical with respect to the colour developed with iodine, a deep red-brown, although, as Bell and Young found, the parent substances differ in this respect.

Results recently obtained by Bell and Kosterlitz³ reveal further identity by examination of acylated derivatives of the two glycogens, and of the glycogens regenerated from these derivatives. It is therefore concluded that fish and rabbit liver glycogens are very probably chemically identical.

These results will be communicated fully through the usual channels.

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¹ *Biochem. J.*, **28**, 832; 1934.

² *J. Chem. Soc.*, 2277; 1932.

³ In the Press.

Homology of the Female Periurethral Glands and the Prostate

So early as 1853, Virchow assumed, on the evidence of histological similarity, that the minute periurethral glands, found in the human female in the neighbourhood of the urethra, are homologues of the male prostate.

The following experiments made by us give experimental confirmation of this and some similar observations, and of the homology of the periurethral glands in the female rat with the ventral lobe of male prostate. The diol of androsterone (C₁₉H₃₂O₂, a derivative of male sexual hormone) prepared by Ruzicka was injected into ovariectomised rats for three weeks in doses of 175–700 γ a day. On dissecting the vagina and uterus of these rats, glands, not normally seen in the rat, were found on the vagina, at the base and in front of the bladder. Macroscopically, these glands had the appearance of the ventral lobe of the male prostate. The largest gland measured 6 mm. \times 4.2 mm. \times 2.2 mm. The addition of oestrone to diol injections did not prevent the development of the 'female prostate'. Microscopical examination revealed a structure typical of the normal ventral lobe of the prostate of the male. This glandular tissue was found in some of the normal and ovariectomised uninjected rats, but only on histological examination; it was in a rudimentary condition, with atrophic cells.

Thus the name 'female prostatic gland' could be used instead of 'female periurethral glands', in order to emphasise the homology of these glands in the male and female, in the same way as the name 'utriculus masculinus' is used to show that this gland is homologous with the uterus of the female.

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Depigmentation, a new Dietary Deficiency Disease, cured by Copper

IN a preliminary communication¹ a short description and two figures were given of a peculiar deficiency disease, involving depigmentation and occurring in young, pigmented rats. The only author who has, so far as I know, published a description of the same manifestations in rats, is Hartwell². She

attributed these symptoms to deficiency of tryptophane and tyrosine in the diet.

Hitherto I have succeeded in producing a similar syndrome in young as well as in adult rats, young cats and young or adult rabbits. In my opinion, young rats are most susceptible to depigmentation; furthermore, they are susceptible during the whole year. Hartwell, however, could not produce depigmentation in rats during the winter season.

The influence of the feeding of many vitamins and minerals (Cu, Fe, Mn, Zn, Co, Ni, Na, K, Ca, Mg, F, Cl, I, P, S) was tested, separately and together: copper appeared to be the only active principle required for prevention or cure. The dosage must be much higher than for cure of anaemia, namely, 0.02–0.12 mgm. per diem for prevention, and 0.07–0.24 mgm. per diem for cure of the depigmentation. The minimum dosage required may thus vary considerably within these limits, in consequence of its availability and of the anti-copper effect of certain (growth-promoting) food-factors, which should always be present to some extent in a satisfactory diet.

Growth in itself may also promote depigmentation.

Loss of fur bears no relation whatever to the onset of depigmentation. It is cured by entirely different dietary factors (vitamin B₂ complex, cystine, residue factor of yeast or liver) and does not occur in rats fed on rations which are deficient in copper only. On the other hand, bald and depigmented rats may be cured by addition of copper so far as their colour is concerned, and the bald areas do not recover in this way.

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¹ Gorter, *NATURE*, **134**, 382; 1934.

² Hartwell, *Biochem. J.*, **17**, 547; 1923.

Vitamin C in Lower Organisms

THE vitamin C staining reagent (acetic acid – silver nitrate) has been applied to certain protozoa, bacteria, moulds, lichens and algæ.

Various ciliates and *Chlamydomonas* were concentrated by centrifuging, washed with distilled water, and then fixed with the acetic acid silver nitrate solution of Giroud and Leblond. Sections of these protista showed the presence of small black granules scattered in the cytoplasm without exhibiting any association with formed elements of the cell, such as the nucleus, chloroplasts, etc. The granules were rounded and each one was approximately one fifth the size of a single chloroplast in *Chlamydomonas*. Five or six granules occurred in each individual, both *Chlamydomonas* and the ciliates. In some of the latter, it was noticed that there was a tendency for the granules to aggregate round certain vacuoles. The culture medium in which these organisms had grown was tested with the indophenol reagent to ascertain whether vitamin C was being synthesised and excreted by them. No appreciable quantity of vitamin C either in the reduced or in the reversibly oxidised condition could be detected, however, in the medium.

Of the large numbers of *Bacillus coli communis* to which the vitamin C reagent was applied, a considerable percentage showed the presence of a single black granule at one end. No specimens were seen which showed more than one granule. Specimens