the case of cathelectrotonus, the sensitivity for orange-red rays is heightened and for the blue-green rays lowered. In both cases there are three regions in the spectrum which have shown no changes at all in response to the electrotonic stimulation used in our experiments. These regions are the two ends of the spectrum, red and violet, and the zone of yellow near 570 mμ.

After switching off the stimulating current we observed, as a rule, changes of foveal sensitivity, which were the inverse of those found while the stimulating current was on. After four or five minutes of electrotonic stimulation, the sensitivity of the eye continued to be different for about twenty to thirty minutes.

The effects described above can be explained on the basis of the well-known ionic changes in the living tissues caused by a constant current, namely, the relative heightening of the potassium ion concentration near the negative pole and the relative heightening of the calcium ion concentration at the positive pole. It is also well known that potassium and calcium are in many physiological respects as antagonistic. At the same time, the action of potassium ions resembles the stimulation of the parasympathetic part of the autonomic nervous system, whereas the action of the calcium ions is like stimulation of the sympathetic nerve[1]. Thus, our experimental observations relating to the dependence of our colour vision on electrotonus may also suggest its dependence on the autonomic nervous system as recently suggested by one of us[2].

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Augmentation of Thyrotrophic Activity

THE following observations were made during pilot investigations on the purification of thyrotrophin from acetone-dried ox pituitary. An aqueous alkaline (*p*H 9–10) extract of the dried gland (from which some inactive material had been removed by isoelectric precipitation at *p*H 5) was brought to *p*H 2 with salicylsulphonic acid. The thyrotrophic activity was divided between the precipitate and the supernatant fluid, each of which apparently contained 100–200 per cent of the original activity. This was shown in three separate experiments. The third experiment showed the least augmentation, which was unfortunate, as it was carried out to test the effects of dialysis (20 hr. through collodion) on the augmenting substance. The results, at least for the supernatant fluid, suggest that the augmenting substance is dialysable, though the small augmentation observed and the few animals used in the test do not establish this statistically.

The results recorded in the accompanying table show the weight of guinea pig thyroid glands (adjusted for body-weight differences) after the injection of doses equivalent in each case to 300 mgm. of the original dried pituitary. The tests were carried out on groups of three animals according to the method of Rowlands and Parkes[1].

Expt.	Wt. of thyroid gland ± s.e. (mgm.)		
	Original Extract	Salicylsulphonic acid	
		Supernatant	Precipitate
1	30 ± 3	61 ± 5	65 ± 9
2	30 ± 2	63 ± 10	58 ± 6
3: normal	28 ± 4	35 ± 5	27 ± 6
dialysed	28 ± 2	26 ± 3	26 ± 3

Weight of thyroid in 11 uninjected animals = 15 ± 2 mgm.

We have had no opportunity of investigating this matter any further, but assume that the augmentation is caused by delayed absorption from the injection site, since such effects of contaminants have been reported for many other biologically active substances. The effect, whatever the cause, must obviously be taken into account when impure thyrotrophic extracts are assayed by methods using subcutaneous injection.

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Structure of Wharton's Jelly

Bacsich and Riddell[1] have recently discussed the nutrition and structure of Wharton's jelly of the umbilical cord. Their letter was prompted by the description by Barcroft *et al.*[2] of a non-vascular circulation through the cord from placenta to fœtus. Bacsich and Riddell compare the avascular nature of cornea, cartilage and Wharton's jelly and suggest that their nutrition must be similar; they conclude that the non-vascular circulation may contribute to the nutrition of Wharton's jelly itself. They point out that cornea, cartilage and Wharton's jelly all contain similar metachromatic substances and say, "It appears justifiable to suppose that the substance responsible for the specific (metachromatic) staining reaction is either heparin, which is a mucoitin polysulphuric acid or a chemically allied substance because only these substances give a metachromatic staining reaction with toluidine blue".

We would like to direct attention to the work of Meyer and his colleagues[3,4,5,6] in America, and McClean and his colleagues[7,8] in Great Britain, who have shown that the acid polysaccharide, hyaluronic acid, is at least a major component of Wharton's jelly. This polysaccharide, which is apparently composed of equimolar parts of *N* acetyl glucosamine and glucuronic acid[3], is widely distributed as a constituent of synovial fluid[4], cornea[6], vitreous humour[3], skin[5,9], muscle[10], the cumulus cells and corona radiata of the unfertilized ovum[11] and the capsules of certain groups of streptococci[12,13,14]. Meyer and Chaffee[6] state that the hyaluronic acid of the cornea and skin exists as the sulphuric acid ester. It is known that hyaluronic acid forms an insoluble complex with toluidine blue; but according to Meyer and Chaffee it does not stain metachromatically whereas the sulphuric acid ester does. We would also direct attention to the exhaustive studies of Lison[15] on metachromatic