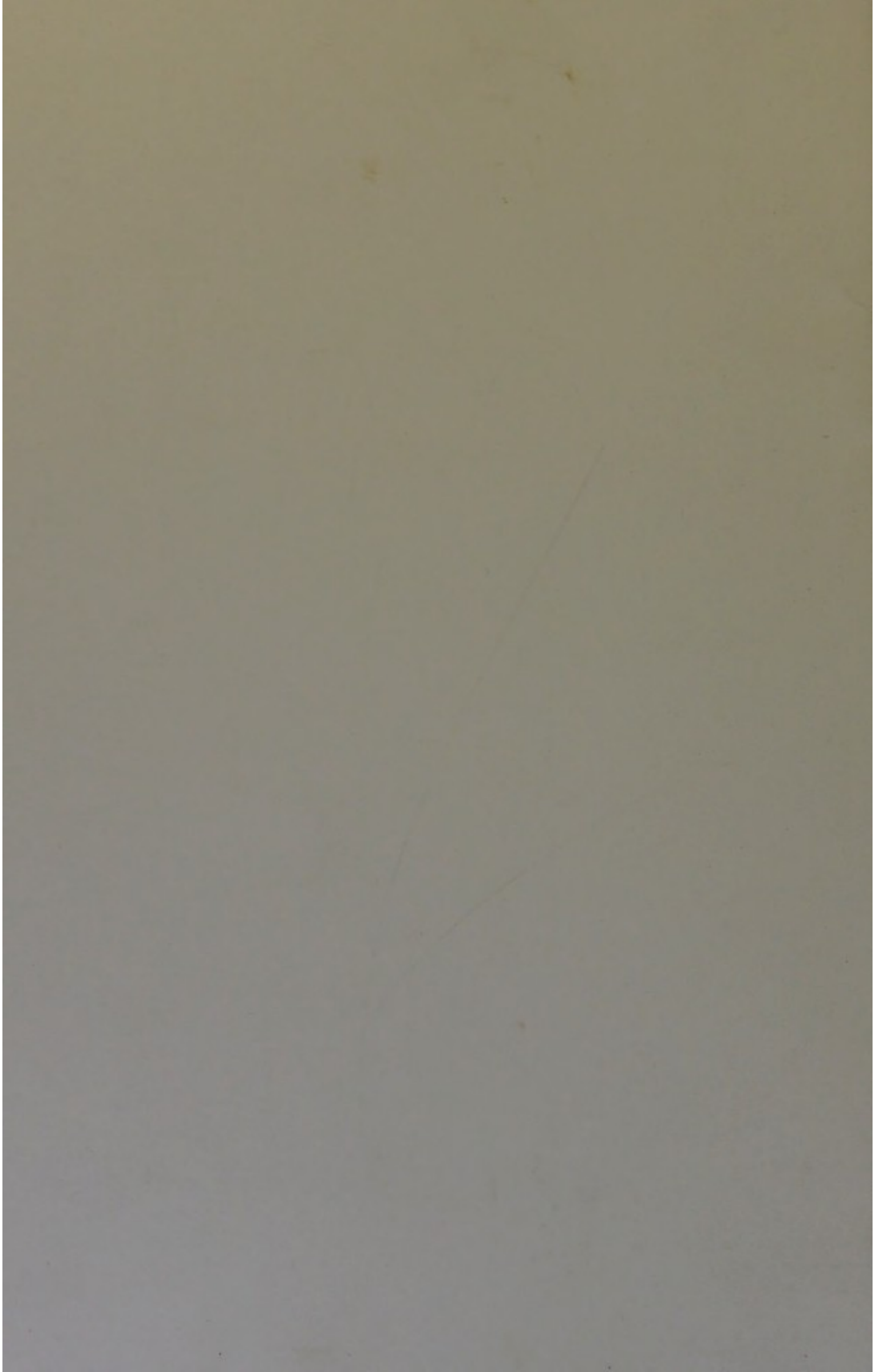
The action of pituitary extracts upon the kidney / by R. Magnus and E.A. Schäfer.



[*From the Proceedings of the Physiological Society*, July 20, 1901.]

The action of pituitary extracts upon the kidney. By R. MAGNUS and E. A. SCHÄFER.

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Watery extracts of pituitary body produce rise of blood-pressure by contracting the systemic arterioles[1] much in the same way as extract of suprarenal medulla produces its well-known pressor reaction. In corroboration of this fact we have obtained—as the result of intravenous injection of pituitary—diminution in volume of the spleen, intestines and limbs—in the last case after a preliminary and probably passive expansion. But whilst the active principle of suprarenal extract causes marked diminution of the kidney and complete stoppage of the secretion of urine, extract of pituitary generally produces, after a short period of latency, a remarkable and long-continued expansion of the organ, accompanied by a decided and often prolonged diuresis.

In illustration of this the following experiment may be given: In a dog weighing 10 kilog. which was yielding during each interval of 5 minutes rather less than 2 cub. cent. of urine, the amount rose after injection of 2·5 cub. cent. of a 2 p.c. decoction of the whole gland to 14 cub. cent. in the 5 minutes, the secretion being about equal from both kidneys although only one was in the plethysmograph. The rise of blood-pressure was small and lasted a few minutes only, whilst the flow of urine reached its maximum in about 15 minutes and at the end of 30 minutes was still double the original amount. Whilst at first the increase in volume of the kidney and the flow of urine were concomitant, the expansion continued after the diuresis had ceased, a condition which has been shown to obtain for other diuretics[2]. Succeeding injections of the extract produce a similar but usually less marked diuresis and kidney expansion, with little or no rise of blood-pressure.

With regard to the part of the gland which yields the substance having the above-described action upon the kidney vessels we have ascertained that as with the effect upon the heart and blood-pressure the active material is contained in the infundibular or nervous portion

[1] For the literature of this see Schäfer and Swale Vincent, *Journ. Phys.* XXV.

[2] Gottlieb and Magnus, *Arch. f. exp. Path. u. Pharm.* XLV. p. 223.

alone: the hypophysial or epithelial portion producing either no effect or a very slight one: the latter when it occurs may well be due to infiltration from the nervous portion, since the glands before they came into our hands had always been removed for some hours from the animal (ox). We have further ascertained that alcohol extracts do not produce the above effect: these on the contrary tend, at least in some animals, to cause a temporary fall of blood-pressure. This is not however accompanied by expansion but by contraction of the kidney and by diminution in the flow of urine. Such depressor effects are probably due to cardiac weakening and are most readily got with the cat; the heart of which animal is well known to exhibit a high degree of sensitiveness to the injection of foreign substances into the blood. It is therefore probable that this diminution of volume is not specific as appears to be the case with the kidney expansion and diuresis which are caused by water extracts.