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Proximo-distal fluid convection in nerves, demonstrated by color indicators. PAUL WEISS and HSI WANG (by invitation). *Dept. of Zoology, The Univ. of Chicago*. The proximo-distal seepage of endoneurial fluid, originally assumed from observations on edema in constricted nerve (Weiss 1943), has been more directly demonstrated by the following experiments on rat nerves.

Particles of Chinese ink, injected into intact nerves in the living animal, move farther distad than proximad (46 cases). More conspicuous differences were obtained with the Prussian Blue reaction. After receiving a localized injection of a minute amount of potassium ferrocyanide, the nerve was left in situ for several hours, then excised and transferred to ferric chloride for Prussian Blue assay of the spread of the injected substance. Of 31 nerves examined between $\frac{1}{2}$ and $3\frac{1}{2}$ hours, 11 showed symmetrical diffusion, 2 a slight proximal excess, and 18 a markedly greater spread distad than proximad (averaging 7.1 and 3.8 mm., respectively). Nerves transected, ligated or excised at the time of injection developed no such differential.

In further experiments, a solid crystal of potassium ferrocyanide (cca. 0.1 mg.) was embedded in the nerve; otherwise same treatment as before. Of 51 treated nerves, 4 showed a slight proximal surplus. The remaining 47 gave the results listed below. The table also lists 28 control experiments with nerves cut at the time of injection.

	Hours after injection	No. of cases	Average diffusion		Difference (D - P) (mm.)
			Proximal (P) (mm.)	Distal (D) (mm.)	
Nerve intact (exper.).....	0-3	27	3.8	6.7	2.9
	3-9	20	3.2	10.8	7.6
Nerve cut (control).....	0-3	15	5.7	5.5	-0.2
	3-6	13	7.7	7.8	0.1

The figures demonstrate the gradual distad shift of the whole diffusion field in the intact nerve at a rate of cca. 1 mm. per hour. [Work done under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and the University of Chicago; also aided by the Dr. Wallace C. and Clara A. Abbott Memorial Fund of the Univ. of Chicago.]

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Proximo-distal fluid convection in nerves, demonstrated by radioactive tracer substances. PAUL WEISS, HSI WANG (by invitation), A. CECIL TAYLOR (by invitation) and MAC V. EDDS, JR. (by invitation). *Dept. of Zoology, The Univ. of Chicago*. Color indicators injected into rat nerves demonstrate a proximo-distal shift of the endoneurial diffusion field (see preceding note). Corroborative evidence was obtained in rat and guinea pig nerves with the use of radioactive sodium chloride and cupric chloride. A minute pellet of these substances was deposited by means of a micropipette inside the nerve in situ. After 3 to 48 hours, the nerves were excised, dried and cut into pieces of equal length (mostly 5 mm.). The concentration of radioactive contents at various distances from the injection site was determined by exposing these fragments successively to a Geiger counter. Usually fragments from identical levels of several nerves were lumped. Corrections were made for background radiation. Radiation intensities were then compared between proximal and distal samples equidistant from the injection point. In 33 out of 34 such pairs from 29 different nerves injected with cupric chloride, the distal samples contained significantly greater amounts of the substance than corresponding proximal samples. In 43 nerves injected with sodium chloride, the differential was in favor of the distal samples in 20 out of 21 pairs.

The results prove a gradual distad shift of the diffusion field in rat and guinea pig nerves. This shift occurs even in the absence of blood circulation, but not after cutting or excising the nerves.

A rabbit nerve gave inconclusive results. [*Work done under contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and the University of Chicago; also aided by the Dr. Wallace C. and Clara A. Abbott Memorial Fund of the University of Chicago.*]