

186 a 110 al min (diminuzione percentuale del 41%). Ovviamente, la bradicardia riflessa è qui meno intensa essendo state denervate le aree barocetttrici carotidiche e quella aortica sinistra. Fra *B* e *C* si procede alla denervazione delle arterie succlavia destra e anonima. La stimolazione del nervo splanchnico produce ancora una netta diminuzione (36%) della frequenza cardiaca (*C*).

Se si stimola nuovamente questo nervo dopo avere isolato e reciso il depressore aortico destro, si produce un forte aumento della pressione arteriosa, superiore a quello delle prove precedenti, ma ora la frequenza cardiaca aumenta lievemente (*D*).

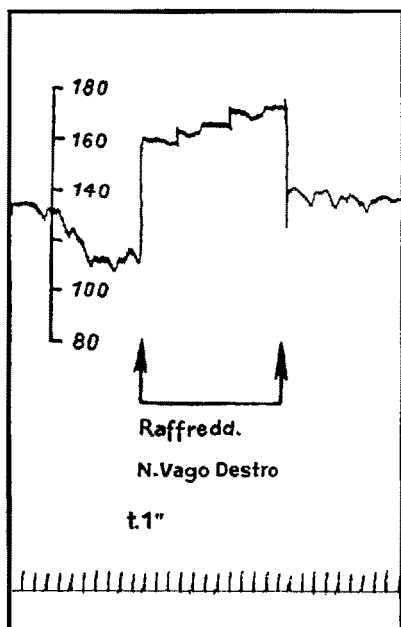


Fig. 3. Cane. Anestesia morfino-cloralosica. Registrazione della pressione arteriosa. Nervi di Hering e vago-depressore di sinistra sezionati; area barocetttrica di MURATORI-NONIDEZ denervata. Raffreddamento del vago destro.

Risultati praticamente uguali furono ottenuti elevando la pressione arteriosa mediante la somministrazione endovenosa di adrenalina.

In 6 esperimenti validi, la bradicardia riflessa prodotta dalla ipertensione in animali con il solo depressore aortico destro intatto, è diminuita del 15–45% dopo la denervazione della zona barocetttrica dell'arteria succlavia destra.

Le fibre pressosensibili ancora intatte dopo tale denervazione esercitavano un'azione tonica sul centro vasomotore. Infatti, se si provocava un temporaneo blocco da freddo del vago-depressore destro mediante un termodo, la pressione arteriosa aumentava, in grado variabile nei vari animali, e ritornava ai valori di controllo riscaldando il nervo (Fig. 3).

Le presenti osservazioni portano a concludere che il depressore aortico destro è percorso da impulsi, efficaci nel controllo del ritmo cardiaco e della pressione arteriosa, i quali provengono anche da zone pressocetttrici situate inferiormente a quella descritta dagli anatomici a livello dell'arteria succlavia destra, ed ubicate probabilmente nell'aorta o alla radice dell'arteria anonima.

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Istituto di Fisiologia Umana della Università di Parma, Italia, il 11 ottobre 1956.

### Summary

The periferal distribution of the right aortic nerve has been studied in physiological experiments on the dog. It has been found that after section of both Hering's nerves and left vago-depressor trunk and after denervation of the baroreceptor area of MURATORI-NONIDEZ lying at the root of the right subclavian artery, the electrical stimulation of one splanchnic nerve or the intravenous injection of adrenaline still produces a reflex bradycardia; moreover the cooling of the vagus nerve still results in a rise of the blood pressure. It is inferred that a group of baroreceptor fibres of the right aortic nerve originate from areas situated in the aortic region.

### PRO LABORATORIO

#### An Adaptor for the Beckman Spectrophotometer for the Reading of Chromatograms and Electropherograms

The need for quantitative evaluation of spots and bands on paper chromatograms by the spectrophotometric determination of their optical density at a chosen wavelength induced us to develop an adaptor applicable to the Beckman spectrophotometer. The apparatus which was developed is shown in Figure 1.

In the place of the cell compartment of the spectrophotometer, we substitute a brass box  $9.5 \times 10 \times 14.5$  cm which is supported by three rods.

The box is inserted between the cell compartment mounting block and the phototube housing by four long screws.

In the wall adjacent to the mounting block, there is a circular hole, exactly superimposed with the opening for the exit of the light beam. On the opposite wall near the phototube, an adjustable vertical slit, 32 mm high, is located centrally.

The light beam from the spectrophotometer is collimated into a narrow vertical band and is focused on the slit by means of two cylindrical lenses 17 mm in diameter.

The first lens is horizontally placed just behind the light entrance hole; the second lens is held in a vertical position in front of the slit.

Two opposite vertical apertures are provided on the anterior and posterior walls for the slide-mechanism which carries the paper strip to be read. The slide-mechanism rides on two steel guides in the space between the vertical lens and the slit, and carries an outer arm to which a graduated plexiglas rule, 20 cm long, is fixed at a right angle. The rule is used in conjunction with a small table which is connected to the apparatus after the apparatus has been completely mounted.

The upper surface of the outer arm of the slide bears a millimeter scale, and, on the adjacent border of the small table, a reference line is drawn which corresponds to the position of the slit.

The slide is made solidly of steel to assure its rigidity; it is made 50 cm long to permit the changing of the paper strips without removing the slide. The slide has a central rectangular opening,  $32 \times 200$  mm, in which the paper is mounted between two removable glass plates which are held securely by two snap springs.

The paper strip is mounted in the slide, and the position of the blank region of the paper strip is located by means of the millimetre scale on the upper arm. This blank reading, in millimetres, is made to coincide with the reference line on the border of the small table. Then the spectrophotometer is set at the desired wavelength

and is operated as usual for optical density measurements. The slit width and the phototube sensitivity are then adjusted to give a zero setting on the metre needle. The slide is then slowly moved forwards and the optical densities readings at the different sections of the strip are determined. The values read are recorded on a sheet of paper (which is fixed on the small table) with the aid of the graduated rule which moves together with the

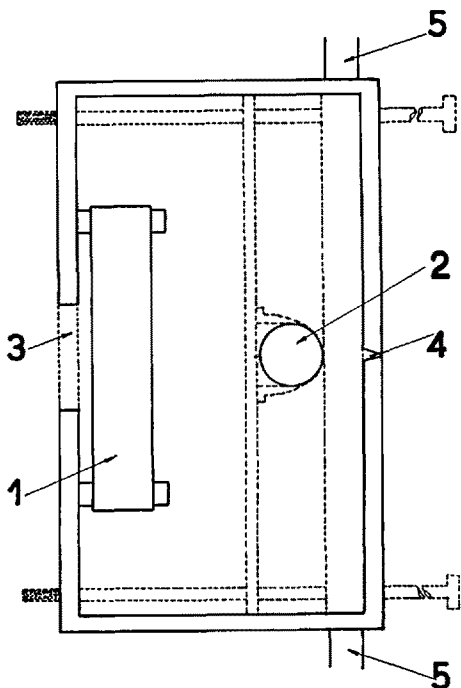


Fig. 1a. — Horizontal section. 1 horizontal lens; 2 vertical lens; 3 light entrance hole; 4 slit; 5 slide-mechanism.

slide. The readings are continued until the blank region of the other end of the paper strip is reached. A strip 12–15 cm long is read in about 10 min. During this time, no variations of the zero value occur, and thus a correct base line is obtained.

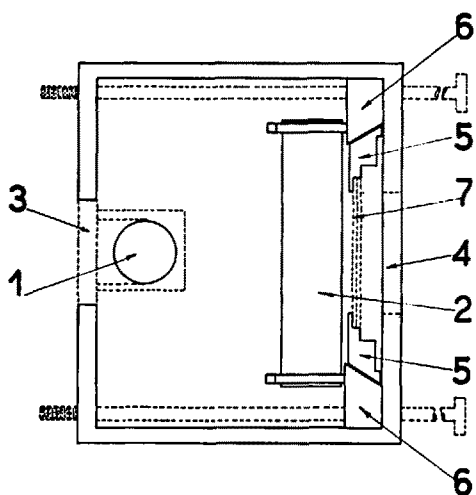


Fig. 1b. — Cross section. 1 horizontal lens; 2 vertical lens; 3 light entrance hole; 4 slit; 5 slide-mechanism; 6 guides for the slide-mechanism; 7 glass plates and paper strip.

By connecting the points marked on the paper, a curve is obtained whose maxima correspond exactly to the centre of the bands; this facilitates the planimetric measurements, and permit a direct comparison of the

curve with the strip. The areas subtended by the curve are directly proportional to the amount of the substance under examination. The narrowness of the slit allows good resolution of very close bands. Since the readings are made at an optimal wavelength, very weakly stained areas may be determined. It has been found that the Beer-Lambert law is followed in the various colour reactions used.

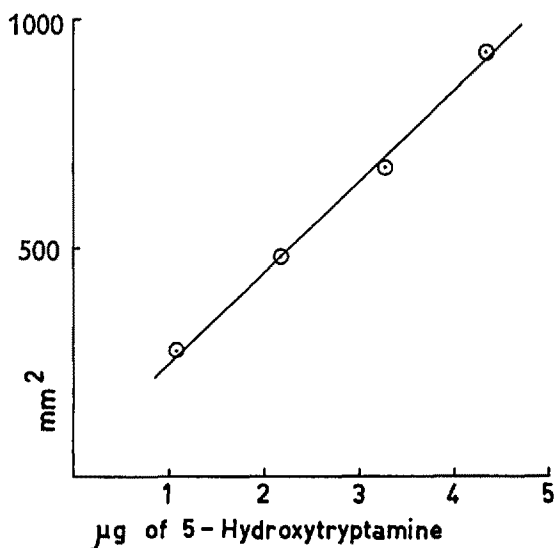


Fig. 2. — Standard curve for 5-hydroxytryptamine. The amount of the substance on the electrophoretic strips is plotted against the planimetric readings. Reaction with  $\alpha$ -nitroso- $\beta$ -naphthol according to UDENFRIEND *et al.*<sup>1</sup>.

Among many other applications, the apparatus has been used, for instance, for determination of 5-hydroxytryptamine after electrophoresis on filter paper, with acetate buffer at pH 4.0,  $\mu$  0.1 (Fig. 2). The colour was developed by the  $\alpha$ -nitroso- $\beta$ -naphthol-reaction, according to UDENFRIEND *et al.*<sup>1</sup>; after the reaction, the excess reagent was extracted from the strips by dichloroethylene, leaving a perfectly white background; readings were performed at 545 m $\mu$ . As it appears from the curve, a linear relationship exists between the amount of 5-hydroxytryptamine and the planimetric readings. The standard deviation is  $\pm$  5%, that is in the order of that usually found for common colorimetric methods. The sensitivity is very high because a total of 1  $\mu$ g of 5-hydroxytryptamine may be reliably determined.

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Centre for the Study and Cure of Tumours, Busto Arsizio (Italy), August 8, 1956.

#### Riassunto

Viene descritto un accessorio applicabile allo spettrofotometro di BECKMAN per la lettura di cromatogrammi e di elettroferogrammi. La luce proveniente dallo spettrofotometro viene trasformata, per mezzo di due lenti cilindriche, in una lunga e stretta banda che permette di risolvere anche righe tra loro vicine. Le letture possono essere praticate alla lunghezza d'onda desiderata. Esiste in tali condizioni una relazione diretta tra la quantità di sostanza in esame e l'area sottesa dalla curva ottenuta ponendo in grafico i valori di densità ottica nei vari punti della striscia in esame.

<sup>1</sup> S. UDENFRIEND, H. WEISSBACH, and C. T. CLARK, *J. biol. Chem.* 215, 337 (1955).