

New method of recording responses of isolated tissues, organs and intact preparations

R. S. TONKS and P. H. WILLIAMS

Dept. of Materia Medica and Pharmacology, Welsh National School of Medicine, Heath Park, Cardiff, CF4 4XW and E.O.S. Industrial Electronics Ltd., Llantrisant, Glam.

A single channel chart recording instrument has been developed with an entirely new system for recording responses in isolated tissues and organs and some intact preparations. It requires no physical connexion with the experiment. The method of recording movement is based on a servo-assisted photo-beam moving in a vertical plane. The beam, when switched on, is driven upwards to search for any object such as the shaft of a writing lever connected to a tissue preparation. When the bottom edge of the lever, and so on, is detected, the photo-beam 'locks on' to it rather like a radar system tracking aircraft movement. From then on, the photo-beam follows the lever upwards and downwards, accurately and without delay. This feature ensures that no extra loading or sources of friction are introduced into the experiment and it enables the instrument to be used with existing isolated tissue apparatus, levers, manometers, tambours, drop or pulse counters without constraining the tissue in any way. An inbuilt pen recorder is driven by the movement of the photo-beam carriage producing a permanent record up to a maximum width of 125 mm. The system magnification (from tissue to writing pen) and the base line shift can be altered by simple adjustment of two controls without any interference with the experiment. Additionally the pen zero can be set for either edge of the chart so that individual responses up to 125 mm of chart width can be recorded for increases or decreases in tone, blood pressure or outflow which is useful in bioassay work. The accurate gearing of the two chart speeds so far available make time markers unnecessary if calibrated paper is used. The instrument can be used as a slave recorder. One instrument has driven up to thirty other instruments as slaves without loss of detail or amplitude of pen excursion in demonstration classes. For signals direct from pH meters, pulse or drop counters, or in slave-recording the moving photo-beam is by-passed. A signal of 300 mV will actuate the recording system to full scale.

The instrument has been used to record changes in tone in smooth and skeletal muscle, for example gut, uterus, vas deferens, trachea, nictitating membrane, frog rectus and gastrocnemius muscle as well as responses to direct and indirect stimulation of the rat gastrocnemius-sciatic nerve preparation. Changes in amplitude in the Langendorff isolated heart have been recorded as well as mean arterial blood pressure and respiratory movement in cat and dog, urine production in rat, isolated rat limb perfusion outflow and continuous pH recording.

The instrument will be demonstrated in use with an isolated tissue preparation.

Inflammatory response produced by a factor released from lymphocytes

J. MORLEY and T. J. WILLIAMS

Division of Immunology, Kennedy Institute of Rheumatology, London W6 7DW

When lymphocytes taken from animals immunized to a protein antigen are cultured with that antigen for 24 h, the supernatant is found to contain inflammatory activity.