

ficant differences between the incidence of ulcers occurring in male and female animals under both experimental and control conditions for either type of ulcer.

It is suggested that the restraint-stress technique of producing oral and gastric ulcers might prove useful as an evaluative measure of the "anti-ulcer" activity of drugs against both types of ulcer.

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#### Electroanaesthesia as a pharmacological technique

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Recent progress in electroanaesthesia has been reviewed by Smith, Tatsuno & Zouhar (1967). This technique has now been investigated with a view to using it in pharmacological experiments. A diagram of the apparatus is shown in Fig. 1. It will deliver a mixed direct and pulsed current. The direct current (d.c.) generator was based upon the circuit described by Smith, Goodwin, Fowler, Smith & Volpito (1961). Pulses were generated from a transistorized variable multi-vibrator which was capable of delivering rectangular pulses with a frequency range between 30 and 20,000 pulses/sec. Pulse width could be varied independently of frequency. At a frequency of 100 pulses/sec, pulse width could be varied between 1 and 9 msec. The oscilloscope was calibrated from the output of a sine/square wave oscillator. The amplified output from the oscillator could also be used as an alternative source of alternating (sine or square wave) current.

The most critical parameters for electroanaesthesia are the two currents passing through the animal. Since this current cannot be determined until the voltage is

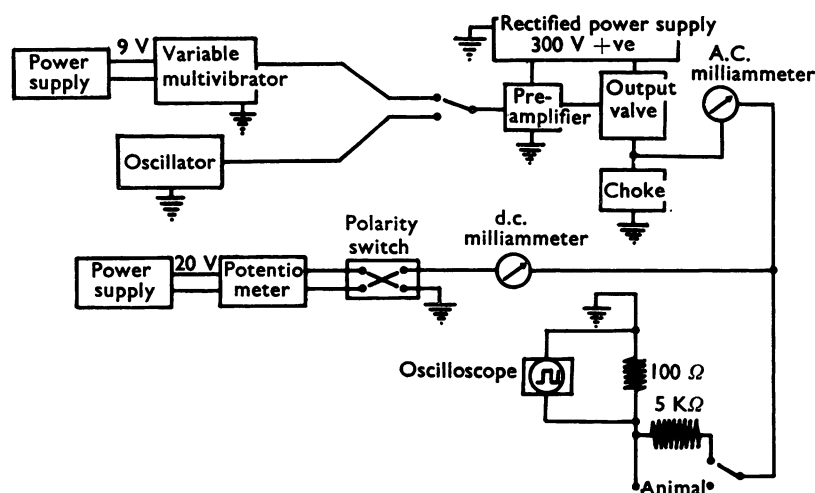


FIG. 1. Diagram of the electroanaesthesia apparatus. It consists of two components, a direct current generator and a pulsed current generator. The mixed direct and pulsed output is used for inducing and maintaining anaesthesia.

applied to the animal, the electrical parameters were selected whilst the output was passed through a 5 K $\Omega$  resistance—a resistance which approximates that of the animal. Subcutaneous needle electrodes were positioned one on the head and one half way down the spine. The output was then switched to the animal, and the two currents readjusted to the desired level.

The technique of “crash induction”, in which higher currents than those necessary for maintenance are applied initially, was commonly used.

Guinea-pigs, mice, rabbits and rats have been anaesthetized with variable success—there being marked species and individual variations. Most success was achieved with rats. This species may be anaesthetized for periods of over an hour using the following parameters: d.c. current, between 5 and 8 mA; pulsed current, 1–3 mA; frequency 100 pulses per sec; and pulse width 2–5 msec.

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#### Spontaneous and drug-induced electrical changes in longitudinal muscle strips from the rabbit duodenum

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Simultaneous tension and electrical changes were recorded in longitudinal muscle strips taken from rabbit duodenum (Ambache, 1954) using a sucrose-gap apparatus (Bülbring & Burnstock, 1960) in conjunction with a Grass polygraph.

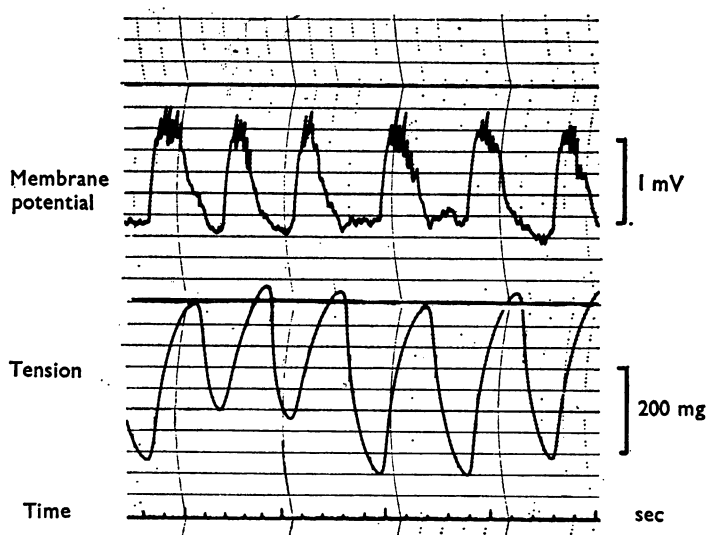


FIG. 1. Rabbit duodenum longitudinal muscle strip. Spontaneous tension and membrane potential changes.