a standard deviation of 0·033 mg was obtained which gives a coefficient of variation of 0·5414%.

Because of the extreme sensitivity of the detector to halothane, the technique is uniquely suited for the determination of blood halothane levels in cases where the agent is present in only trace amounts. It is therefore being used to measure the uptake of halothane by anaesthetists in the operating theatre environment, to investigate the washout from the body of halothane after general anaesthesia and to determine the renal excretion of halothane.

The method has also been successfully used in the determination of plasma/red cell distribution ratios of both halothane and trichloroethylene.

The measurement of renal blood flow during anaesthesia by means of a single-shot urineless technique with ^{131}I-hippuran

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An investigation has been carried out into the suitability of the single-shot, urineless, technique in dogs for the estimation of renal blood flow during general anaes-

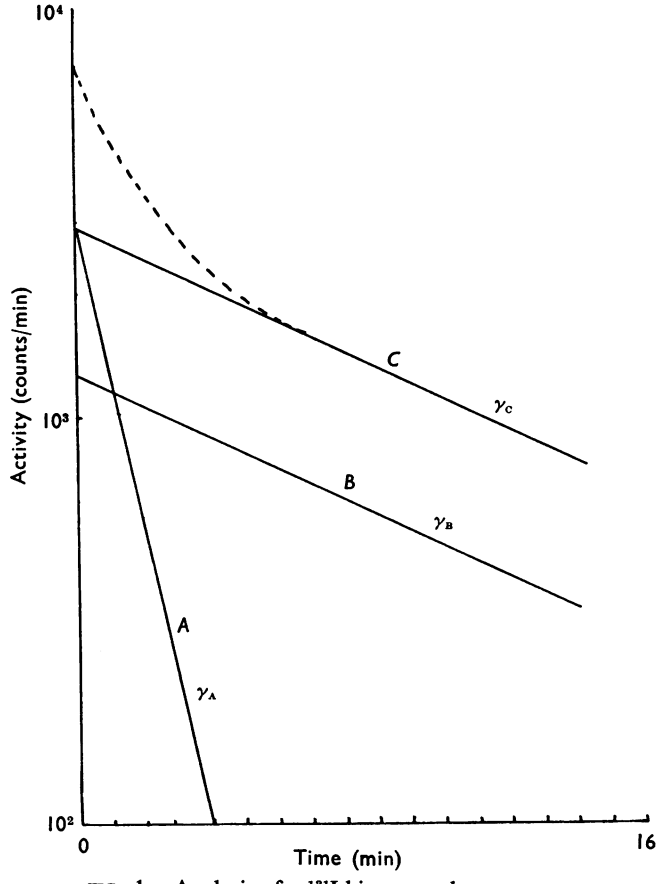

FIG. 1. Analysis of a ^{131}I-hippuran clearance curve.

thesia with halothane. In each of eight dogs, doses of 15 μCi of ^{131}I-hippuran were injected during the control period under chloralose anaesthesia, during the administration of halothane and after the recovery from halothane.

Following each injection of the isotope, the clearance curves are observed by means of an external scintillation counter placed over the heart and also by the taking of simultaneous serial arterial blood samples. Each clearance curve, lasting 30 to 40 min, is then analysed on the basis of a single or double exponential function. The effective renal plasma flow (ERPF) is calculated on the basis of the activity of the injected dose (*Io*), the extrapolated activities at zero time (*Ao, Bo, Co*) and the slope of these lines (γA, γB, γC) according to a single compartment analysis (Ram, Evans & Chisholm, 1967). For the blood samples, ERPF$_B$=$Io\gamma B/Bo$ and ERPF$_C$=$Io\gamma C/Co$ for the external counting. A double compartment analysis (Sapirstein, Vidt, Mandel & Hanusck, 1955) is also performed with the external count values, that is $\mathrm{ERPF}_{a+c} = \frac{Io\ \gamma A\ \gamma C}{Ao\ \gamma C + Co\ \gamma A}$. The ERPF is converted into total renal plasma flow (TRPF) by taking the extraction ratio (E) of hippuran into account, i.e. TRPF=ERPF/E. (E was found by us to be 75% in previous experiments.) Total renal blood flow (TRBF) is calculated from TRPF and the haematocrit (hcrt), that is TRBF=TRPF/(1-hcrt).

A good correlation (0·983) was found between both methods of analysing the curves. Blood halothane concentrations of 6–8 mg/100 ml (0·5% v/v) did not alter the mean renal blood flow, but at 10–14 mg/100 ml (1% v/v) the TRBF was reduced to an average of 64% of the control value.

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A three-channel telephone data link for the transmission of physiological variables

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Telephone data links can be used to send physiological signals in analogue form to a computer for digitizing and processing if the distances are too great to employ direct wire connections. A three-channel frequency modulation link has been established between the operating room at St. Peter's Hospital, Covent Garden, and an Elliott 903 on-line computer system in the Royal College of Surgeons. The three carrier frequencies lie in the band 1,000 to 2,000 Hz and are generated by voltage controlled multivibrators; the bandwidth available for each channel is zero to approximately 100 Hz. The modulators are fed with signals from the outputs of a multichannel ink-jet recording system. The input to each channel is provided with gain and d.c. level setting controls, and the signal applied to each modulator is monitored on a large screen oscilloscope. An overload warning circuit indicates when an excessively large input signal is sweeping the carrier out of band. At the receiver, narrow band passive filters select the individual carriers, which are then demodulated, and a digital frequency meter monitors the centre frequencies of the carriers. After