it is obvious that the polygenic system involved is of an additive character. The variation of the disease incidence should be, therefore, according to Grüneberg (1952) considered as a "quasi-continuous" one.

We reported here a so far not described case of nearly zero frequency of adjuvant-induced arthritis in the AVN strain of rats. On the other hand, there exists a 100% incidence of the disease in the LEW strain. These strains could be a suitable material for investigation of detailed pathogenesis of the disease.

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December 3, 1970

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An apparatus for facilitating the measurement of tracer movements in a large number of muscle strips

Studies of the efflux of radioactive tracers from muscle have assisted the understanding of processes involved in contraction (Langer, 1968; Shanes & Bianchi, 1960; Van Breeman, 1969). The time course of tracer release is usually measured at convenient time intervals by assay of the medium in which the tissue has been suspended (Burgen & Spero, 1968). Should the specific activity of the tracer be low, the radioactivity released may very rapidly fall below the limits of detection, and it becomes necessary to assay the tracer remaining in the muscle strips as a function of time. Since it is frequently desirable to study tracer efflux under conditions similar to those under which contractility is measured, the strips should be set up under tension. The apparatus described below enables up to twenty-five tissues to be suspended under a tension of approximately 0·5 g in a single organ bath. The tissues may be removed rapidly for assay.

The tissues are suspended between small stainless-steel hooks which fit over wire projections from the base of a support, and stainless-steel springs attached to small pegs, which slot into the upper platform of the support, where they are retained by a low raised lip. The apparatus, (Fig. 1A) is placed in a 600 ml beaker the bath volume of which is effectively 400 ml and the physiological solutions are admitted to, and drained from, the bath under pressure. The solution is gassed down the central column of the tissue support, and the temperature is maintained by allowing the organ bath to stand in a temperature-controlled water bath.

In a typical experiment equilibrium is attained after 1 h in a suitable physiological solution. The bath is then drained and filled with medium containing the radioactive tracer, and after the required pre-incubation period, the bath is again drained, and the tissues are washed thereafter at frequent intervals, with fresh physiological solution. At convenient intervals one or more tissues are removed from the support and assayed

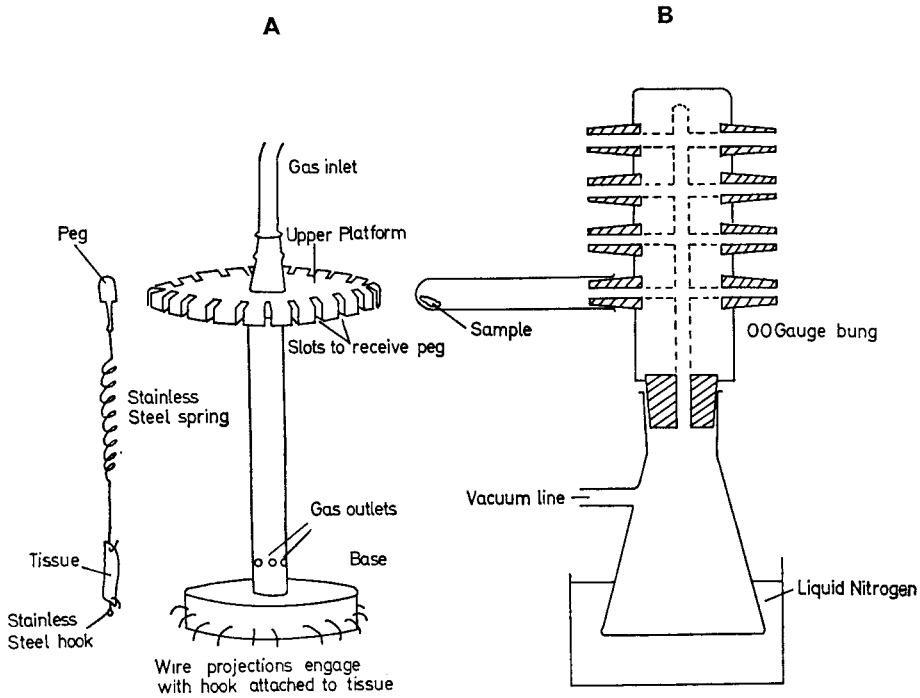

FIG. 1.A. Apparatus for the suspension of up to twenty-five tissues in a single organ bath. B. A simple apparatus for drying a large number of tissue samples.

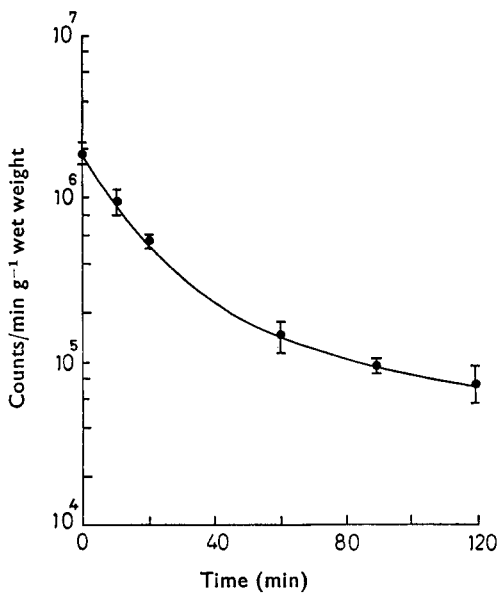

FIG. 2. The efflux of [^{3}H]digitoxin from rabbit myometrium using the apparatus shown in Fig. 1A.

for radioactivity. The desaturation curve of [^{3}H]digitoxin from rabbit myometrium, obtained by this means, is shown in Fig. 2.

A necessary adjunct to this apparatus, if the radioactivity is to be measured as d/min mg^{-1} dry weight of tissue, is a means of drying a number of small tissue samples. A simple device for this purpose is shown in Fig. 1B. Heavy Perspex rod, about 5 cm in diameter is drilled radially with four rows of eight perforations, and these are connected by a central channel drilled along the long axis of the rod. At each of the outlets around the rod, a gauge 00 rubber stopper bored with a single hole is recessed into the rod and cemented in place, care being taken to ensure that the connection is airtight. The central channel terminates in a gauge 8 rubber stopper also bored with a single hole, and recessed and cemented into place. The samples to be dried are placed in ignition tubes, frozen in liquid nitrogen and pushed on to the projecting stoppers. All outlets must be stopped, if necessary with empty tubes. The large stopper in the base is then inserted into the neck of a buchner flask which is supported in a bath of liquid nitrogen. The side arm of the flask is connected to a vacuum line.

Drying to a constant weight in this apparatus is achieved within 6–8 h, and thin tissues dry much faster.

I thank Miss R. V. Murthy for performing the experiments using [^{3}H]digitoxin. The significance of these studies will be reported elsewhere (Daniel, E. E. and Murthy, R. V., to be published). I am grateful to the Medical Research Council of Canada for financial support of this work.

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December 2, 1970

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