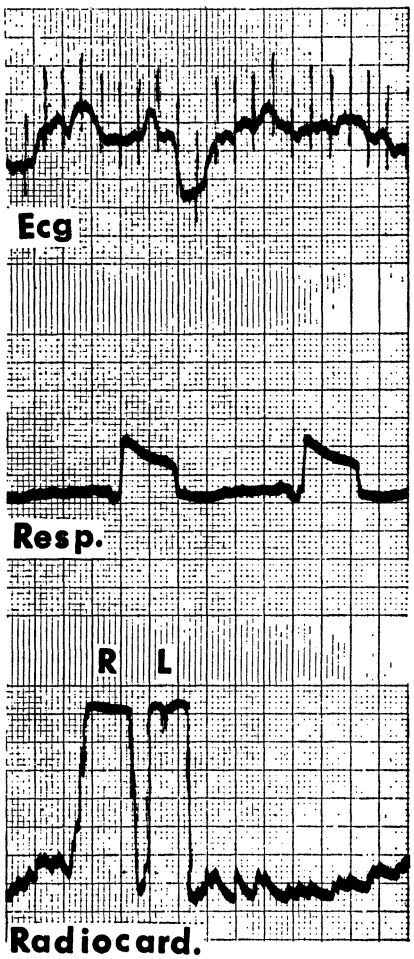

FIG. 1. Radiocardiogram of a normal dog. *R* and *L* indicate passing of the isotope through the right and left ventricles.

In a first series of experiments, 6 anesthetized dogs were studied. Later, 24 normal human subjects between 22 and 60 years of age were studied. Both in animals and in humans, the injection of the isotope is followed within 2–6 sec by a large monophasic wave lasting 1–4 sec, which may be preceded by a smaller one. Following an interval of 1–3 sec, during which the tracing may return to the baseline, a second monophasic wave occurs; this wave lasts 2.5–4 sec and is often preceded by a smaller wave (Fig. 1). It is likely that the two large monophasic waves correspond to waves *R* and *L* described by Prinzmetal and co-workers (*1, 2*) and are due to the passing of the isotope through the right and left ventricles. It is too early to decide whether the smaller waves preceding *R* and *L* are due to passing of the isotope within the respective atria. This possibility, however, should be considered. Both the *R* and the *L* wave frequently include from two to four smaller, rounded waves. In normal subjects, from two to four ventricular contractions occur during the passage of the isotope through each ventricular chamber.

Sometimes, after the end of the second large wave (*L*), more waves are visible. They frequently occur by couples which resemble the *R-L* couple originally observed. They have either the same or a greater height than the original couple and may be observed for several minutes. They might be explained by the recurrent circulation of the isotope through the right and left ventricles after returning from several possible routes. The shortest is the coronary circulation; the longest, the splanchnic circulation or that of the lower limbs. Theoretically, the mixing of the isotope with circulating blood should rapidly attenuate these waves. Therefore, the interpretation is still tentative.

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The Culture in the Developing Chicken Embryo of a Filtrable Agent from *Verruca vulgaris*

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Although there is abundant evidence (*1—7*) that the causative agent of the common wart is filtrable, there are only two reports of its having been grown in tissue other than human. Ullman (*5*) reported having produced a vaginal papilloma in a bitch which was inoculated with a human laryngeal papilloma, and Rhodes (*8*) has mentioned, without details, the successful transfer of human wart material to a monkey's prepuce. Felsher (*9*) reported failure to cultivate this agent in chick embryos.

A total of 17 warts developed on the author's right hand during a period of at least two years. The primary wart was removed by curettage and electrocautery on July 10, 1951, by a dermatologist.[2] On July 12, the wart was ground with sterile sand in a mortar until the whole was reduced to a fine powder. This was suspended in 3–4 ml of nutrient broth and frozen. Aerobic agar culture remained sterile. On July 13, the sample was thawed, resuspended, and centrifuged. One ml of the supernate was added to 10,000 u of penicillin and 10 mg of dihydrostreptomycin, each contained in 0.1 ml of .85% NaCl solution. The mixture was then inoculated on the chorioallantoic membrane (CAM) of each of 5 chick embryos 10 days old in a dose of 0.2 ml/egg by the routine technique employed in this laboratory (*10*). The original nontreated suspension was inoculated on the CAM of each of 2 other eggs in a somewhat larger dose.

[1] Paper of the Journal Series.
[2] O. J. Sokoloff, 69 Paterson St., New Brunswick, N. J.

Two of the 5 eggs receiving antibiotic-treated inocula were examined on the fourth postinoculation day. No lesions were observed. On the seventh day, the remaining 3 were examined. Two had barely perceptible lesions at the inoculation site, and the pole of the third had the rough appearance of sandpaper with definite but small cystlike proliferations at the inoculation sites. One of the 2 embryos inoculated with nontreated suspension had an edematous CAM, particularly at the pole, and small but definite raised lesions at each inoculation site. The last embryo, which received more inoculum than any of the preceding, had several hard, whitish "pearls," which were raised above the surface of the CAM about 1/8 in. Aerobic agar cultures remained sterile. Subsequent passages have shown that the agent grows well on the CAM of 10-day-old chick embryos, routinely producing dense white to greenish pearls varying in size but usually between 1/16 and 3/16 in. in diameter. Occasionally, many much smaller secondary lesions are present on the CAM. In a few embryos there has been evidence suggesting that destruction of blood vessels has occurred, thus permitting hemorrhage. When the individual lesions are close enough to coalesce, a yellowish substance resembling necrosed tissue has been observed between the CAM and the inner shell membrane.

To demonstrate the filtrability of the agent provoking these lesions, a Boerner filtrate of a ground suspension of first-passage membrane and a Boerner and a Berkefeld "V" filtrate of a second-passage membrane were prepared and inoculated on the CAM of 10-day-old embryos. Neither Boerner filtrate produced lesions, but the Berkefeld filtrate caused lesions which could not be distinguished from nonfiltered material. Aerobic agar cultures of the filtrates and of all eggs inoculated with them or with nonfiltered material remained sterile. Since the Boerner filter utilizes a Seitz-type asbestos pad, these results were not unexpected.

Because of the character of the lesions produced and because of the filtrability of the agent causing them, it seems probable that a virus has been cultured. More detailed information on this and other aspects of the problem are to be considered in a future report.

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A Metabolism Unit Designed for Radioisotope Balance Studies with Dogs[1]

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The dog is widely used in nutritional and physiological experimentation. Problems raised by the use of radioactive materials in such studies have necessitated the redesign of cages for quantitative collection of excreta. For the most part, the cages now employed are based on that introduced by Gies (*1*) or Bliss (*2*) and consist of square or rectangular units with mesh wire bottoms upon which the animal stands over a metal urine funnel. The feces are retained by the wire floor, and the urine passes through the mesh and is directed by the funnel to a collecting vessel beneath. Details of the basic requirements that must be met by a satisfactory unit for isotope studies and the shortcomings of the conventional type of animal cage have been previously discussed (*3*). The need for minimizing contamination of the surrounding area and the animal itself, as well as the importance of quantitative separate collection of excreta, with a minimum of smearing on the restraining surfaces, has been emphasized (*4*).

Taking these requirements into consideration, a metabolism cage has been designed for balance studies with dogs that fulfills the above conditions and effects the satisfactory quantitative separate collection of urine and feces eliminated by either sex. This has

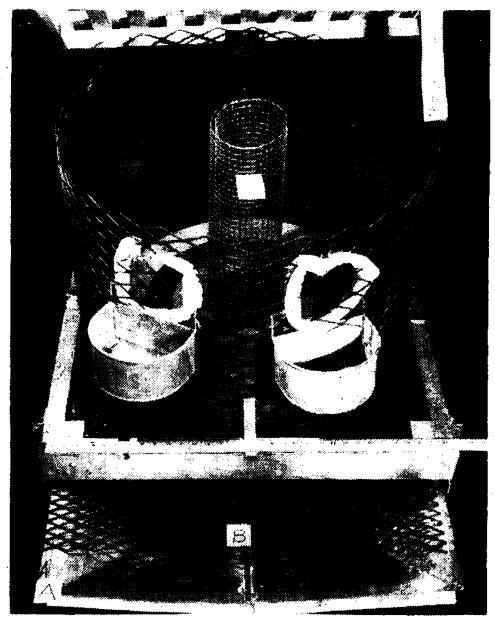

FIG. 1. Metabolism unit designed for quantitative separate collection of excreta from dogs of either sex (note circular false floor separator in position).

[1] Published with the approval of the director of the University of Tennessee Agricultural Experiment Station.