

administered RI.

### Conclusion

The authors have developed an apparatus for the simultaneous recording of the ECG tracing on the VTR and an apparatus for the slow-speed reproduction of the VTR and arbitrary selection of the cardiac cycle during 35 mm cinematography. Slow-speed reproduction has

thus permitted relatively fast 35 mm camera action with an increase in technical accuracy from 25% to 95% and a corresponding reduction quantity of RI administration. With slow-speed reproduction, the 35 mm camera shutter remains open for a relatively longer period per cardiac puls, permitting two exposures per pulse, even in children with tachycardia.

## A biomedical Telemetry System to Study the Function of Organs of Free Ranging Animals

T. KOBAYASHI, T. SUGITA and T. SASAKI

*Toshiba Research and Development Center, Tokyo Shibaura*

*Electric Co., Ltd., Kawasaki*

T. IWASE and R. SASSA

*The Institute of Adult Disease, Asahi Life Foundation, Tokyo*

M. IIO

*Department of Nuclear Medicine and Radiological Science, Tokyo*

*Municipal Yoikuin Medical Center for Aged, Tokyo*

A biotelemetry system has been developed to dynamically study the function of organs of free ranging animals. Its applications in nuclear medicine have also been studied.

The system developed consists of an implantable semiconductor radiation detector, a signal conditioner, FM signal transmitter, FM receiver and a data handling unit.

The system was evaluated by carbon-14 beta rays at room temperature. The detector reliability and signal transmitting characteristics were also studied by using dogs under the same condition as the experiment where the detector was implanted in a dog by abdominal surgery and a transmitting unit was attached to the dog's back.

The performance characteristics of this telemetry system are as follows; 1) The implantable semiconductor detector has a 20 mm<sup>2</sup> sensitive area and noise level of 15 keV (fwhm). 2) Total

volume and weight of the transmitting unit are  $2 \times 6 \times 9.5$  cm<sup>3</sup> and 170 grams, respectively. 3) Power consumption of the transmitting unit is about 100 mW. 4) Detectable minimum radiation energy deposited to the detector is 60 keV at body temperature. 5) Output power and frequency of the transmitting are 5 to 10 mW and 44.88 MHz, respectively.

In use, the transmitting unit is carried in a harness on the animal's back. It needs to be packed in foam rubber and the temperature allowed to stabilize during the experiment in order to minimize temperature-induced drift for radioactivity counting statistics.

This system is currently being utilized to dynamically study the liver function of dogs. This system is also applicable to the study of other physiological information from free ranging animals.