Clinical Uses of Radioisotopes in Routine Examination

Some experimental studies on circuits of the instruments

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Radioisotopes are very useful tools in the clinical field and many technicians are working with them. But the commercial instruments, designed for several purposes, are expensive and complicated and sometimes make troubles in handling when used in routine examination.

So more convenient and cheaper ones are desired, and in our laboratory scintillation counters, gas flow counters, scalers, ratemeters and scintiscanners have been designed for this purpose and tested for several years.

The basic ideas of designing are;

1. each instrument is for single clinical examination,
2. the lay-out and manipulation on the frontal panel are as simple as possible, which reduce misoperation. For instance, scaler need only A.C. power ON and start ON,
3. the air conditioning in the room claims avoidance of heat production, use semiconductors,
4. every part is exchangeable promptly when trouble occurs.

A two channel ratemeter and a scintiscanner which have been recently designed and finished up are reported here.

The two channel ratemeter was designed for blood circulation and heart function tests and consisted of two pulse height analyzers, two ratemeters, high voltage supply, pen-recorder, tape-recorder, and two 3"×2" NaI (TI) crystals. Memory tube oscilloscope and small analog computer were accompanied.

The scintiscanner was designed to print isodose (isocounting) curves on the scintigram by controlling the input pulses from the time between pulses by a small, simple coincidence circuit which is attached as the back ground eraser.

Both instruments are working and a long-run test is being carried on.