to the opacity of original scan record. This instrument was proved to be useful for the accentuation and visualization of the small variations of counting rate within the organ that could be suspected on the original scan. The rescanner was also applied to analyzing the original scans of very high or very low density. Little time is required for rescanning in the use of polaroid color film and the novel servomotor mechanism, that allows to set the rescan speed high without any distortion of the image.

Scanning with Technetium-9mm —Brain, Thyroid, Liver, and Bone Marrow—

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Technetium 99m has been used for scanning with the conventional scanners in our hospital since January 1965. Relatively low gamma-ray energy of Tc-99m (140 keV) interacts more effectively with NaI crystal than those of ^{131}I or ^{198}Au. The background can be reduced fairly low by the effective shielding of crystal to its soft gamma-rays. The fact that Tc-99m has no beta-rays and its half life is relatively short (6 hours) makes it possible to administer the large dose of the isotope to the patient without increment of internal radiation. The large-dose administration increases the counting rate in scanning and increases the target to non-target ratio. Besides, Tc-99m can be used for scannings of various organs with various chemical forms.

Methods: Scans of brain, thyriod, liver and bone marrow with Tc-99m were compared with those of ^{197}Hg, ^{203}Hg, ^{131}I, and ^{198}Au. The 3″ × 2″ crystal scanner (37 holes collimator) and the 2″ ×2″ crystal scanner (19 holes collimator) were used. Brains and thyroids were scanned with $^{99m}TcO_4$, and livers and bone marrows with $^{99m}Tc_2S_7$ colloid.

Results: Brain scan with Tc-99m is superior in the detectability of brain tumors to those of ^{197}Hg or ^{203}Hg Neohydrin. This seems to be due mainly to the effect of high dose administration. Scans of thyroid and liver are comparative to those of ^{131}I and ^{198}Au colloid. For the bone marrow scans, Tc-99m is expected to be the substitute of ^{198}Au colloid with the reduction of considerablly high radiation to the liver and spleen. But our results were less satisfactory than those with ^{198}Au colloid.

Application of Tc-99m Preparations for the Organ Scanning

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Recently interest has increased in the use of Technetium-99m as a scanning agent. The main reasons are as follows; 1) short physical half life of 6 hours, 2) the absence of primary particle radiation, 3) the emission of clean 140 Kev gamma ray and 4) the pos-