In this report we described of functions and characteristics of two minicomputer systems which designed for data processing in the field of nuclear medicine.

One is the system with TOSBAC-40C (40 kB) as CPU. This consists of magnetic disc unit, magnetic tape unit and graphic display unit, and is connected with scintillation camera on line. So the software "NUMOS" for image data processing is built in this system. Furthermore by adding the software "DOS-40 (E)" and mark card reader, developments of application programs for logic diagnosis and recording of patients are executed. The program for logic diagnosis consists of process filing data and reporting and doing output of diagnosis at real time. Now this program use likelihood method.

Another is the syste with YHP-2100 (48 kB) as CPU. This consists of magnetic disc unit, high speed printer and simple display unit, and is utilized for general purposes. So for image data processing by using this system, magnetic casette tapes are used as data medium and processed off line. Programs for reading casette tape are developed.

A Simple Mathematical Method for the Analysis of Radioimmunoassay Data with A Computer Connected with An Automatic Gamma Counter On Line

S. OHGO*, Y. KATO*, S. MATSUKURA*, H. IMURA*, K. HORIO**, H. KAWAGUCHI**, S. NAKANISHI** and H. UEYANAGI**
**3rd Division, Department of Medicine, Kobe University School of Medicine,*
***Shimazu Seisakusho Ltd.*

Simple mathematical methods have been used to analyze radioimmunoassay data utilizing a small computer (Olivetti P652) connected on line with an automatic gamma counter (Shimazu AL201). Construction of doseresponse curve, elimination of unreliable data and calculation of concentrations of unknown samples were all automated by this computer. After eliminating data of standard preparations with B/F difference between duplicates larger than 0.2 as erroneous data, first simulation of standard curve was performed either by the rectangular hyperbola or the cubic polynomial: $Y=a_0(\log X)^3+a_1(\log X)^2+a_2(\log X)+a_3$. Taking all data within the range of $Y\pm0.1Y$ of the simulated equation including the data once omitted, the second fitting of the standard curve was performed with the same equations. We also used a linear polynomial: $Y=a_0 \log X+a_1$ for the second fitting. In the latter case, the standard curve was automatically divided into two or three segments in order to minimize the variance. Standard curve calculated by this method usually showed best fitting with least variance and therefore seems most preferable method.

Transaction of Multipule Pinhole Coded Aperture by Min.-Computer

Takeo HASEGAWA, Hiroshi HASIBA, Tatsuo FUJINO, Keiko ASANO, Satoko YOKOO, Misako HOSOI, Akira KASAHARA, Akimoto KOBAYASHI and Magoichi MATSUDA
Department of Radiology, Kansai Medical University

By making a few improvements on the Multiple-pinhole Coded Aperture (MPCA) and decoding the obtained shadowgrams either by otpical system or computer, we have tried to solve the problems of restriction on the lateral spatial resolution and its sensitivity, associated with the gamma camera collimetor. Theoretically, lateral spatial resolution depends upon the size of pinhole; the smaller than diameter of pinhole, the sharper than resolution. This shadowgram contains tomographic images from which we are able to obtain the (tomographic) images of the desired depths