scintigram and a hyperthyroid scintigram are classified comparing an area of right lobe with that of left. The former is more in 8~10 cm^2, and reduces the number to in small area. The latter is more in 10~12cm^2 and more.

In the next place, the scintigram were classified into five groups, that is, normal type, small defect type, lobe defect type, abnormal type and unclassified type, and comprised with diseases. Most of scintigrams show suitable tendency as expected, but in some instance, they could not be classified and they were in the colum of unclassified type. This fact must be noticed. According to an up-take rate, hyperthyroidism were devided into a normal type and other types. By this classification, the former increases the number accompanied with the increase of up-take rate, but the latter is irregular in number. By all account, about 1200 scintigram accompanied with clinical diagnosis was classified and position and size of normal scintigram was noticed.

As to the size, a normal group and a hyperthyroid group were recoganized their variance. And an unclassified tyep seems to occur easily in the time when a rather smaller quantity of the I^{131} was given to the patient. Therefore, it seems to be better to give a smaller quantity of the I^{131}, in usual but the fact that the unclasified scintigrams rise easily in these case must be noticed.

A condition of defect of the thyroid-scintigram could not be classified by the nature of tumors in present, so that this part may be studied in future.

IV. Liver and Brain

Studies of the Reticuloendothelial System (RES)

1) Improved Method for the Measurement of the Phagocytic Capacity of the RES in Man
2) Changes in the Phagocytic Capacity of the RES in Viral Hepatitis and other Hepatic Disorders

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By the previous report we have evaluated the method to prepare ^{131}I labelled aggregated albumin (AA) for the study of RES function in man. Eventhough this initial study was quite successful for the first reliable measurement of human hepatic RES function and observved increased RES capacity in certain bacterial infections and decreased RES capacity in certain viral infections, however, there remain certain problems to overcome. (1) ^{131}I label has not enough shelf-life to make long time follow up study of the patients possible. (2) Conditions of production of AA was not stable and reproducible enough and was too complicated with 2 step heatings. (3) Carrier aggregated albumin was produced in hospital lab. with more simplified method than the one applied on the production of labelled AA. Therefore the maximum phagocytic capacity thus obtained was likely to be overestimated, because of the unequality of carrier AA with labelled AA. (4) Original sample handling steps to remove free iodide in serum were rather complicated including resin colum treatment, thus reducing counting efficiency and making sometimes difficult the application of automatic sample counting system.

This time we made some complete improvement on our previous method. (1) ^{125}I labelling was used instead of ^{131}I, causing several advantages such as higher counting efficiency, longer shelf-life and the decrease in dose and radiation. (2) Single step heat-

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ing at 83±1°C of 3% albumin buffer solution for 20 min. was proven to produce the most suitable AA solution for RES study with good reactivity to ^{131}I or ^{125}I. (3) Using AA carrier prepared by the same way to the labelled AA, mean value of maximum phagocytic capacity was measured as 0.340 mg/kg min. from 10 control cases (cm. previously reported as 1.07 mg/kg min.). (4) Sample handling was simplified using tannic acid reagent precipitation method. (5) Using this modified method several cases with viral hepatitis did show marked *increase* in this capacity. No significant decrease was observed in RES capacity in cases with vical hepatitis. Four among 13 cases with viral hepatitis even showed more than twice increase in hepatic RES capacity. Four cases with liver cirrhosis did not show any significant change in RES capacity.

Studies on the "Stream Line" Phenomena in the Portal Vein in Man and Dog Using ^{131}I Labelled Macroaggregated Albumin (MAA)

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The possible existence of segregated stream of blood in the portal vein ("Stream line" phenomena in the portal vein) and their subsequent distribution to definite parts of the liver is of interest and was studies by many investigators. Although the portal streamlining was proven in the dog, it could not be confirmed in man.

In this work "Stream line" phenomena in the portal vein was reconfirmed in the dog and was found for the first time in man.

One hundred μc(dog) or 300μc(man) of ^{131}I labelled macro-aggregated albumin (MAA), ranging 20—50 μ in size, dissolved in 1.0-1.5ml saline solution, was employed as the indicator. Eleven cases of human subjects, having normal hepato-portal circulation, and 11 dogs were studied. After laparotomy ^{131}I labelled MAA was injected into different radicles of the portal vein of the dog and man. For infusion 2 minutes were taken in order not to disturb the stream line. The ultimate localization of ^{131}I labelled MAA in the regional capillaries of the liver was observed using scanning method for man externally and for the dog after removal of the liver.

Scanning of the liver after the injection of ^{131}I labelled MAA into tributaries of portal vein showed the segmental distribution of ^{131}I labelled MAA in all these cases.

From the above findings the existence of "Stream line" phenomena in the portal vein was proven not only in the dog but also in man.

Detection of Hepatic Shunts by ^{131}I MAA Scintigram (III)

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The principle of this new method is as follows: Since adequately prepared MAA with the particle size ranging from 20 to 100 μ is completely trapped by the capillary net work where it is first delivered, MAA can not reach the post capillary blood stream unless there is a by-pass route whose diameter is large enough to permit passing of

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