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McAfee J G, Ause R G & Wagner H N, Jr. Diagnostic value of scintillation scanning of the liver: follow-up of 1,000 studies.

Arch. Intern. Med. 116:95-110, 1965.

[Depts. Radiology and Radiological Science, Johns Hopkins Schools of Medicine and Hygiene and Public Health, Baltimore, MD]

One thousand diagnostic studies of the liver were performed by rectilinear scintillation scanning using colloidal Au-198, or I-131 rose bengal, or colloidal albumin, and correlated with clinical, laboratory, and pathological findings. Normal variations in hepatic configuration, and scanning abnormalities in diffuse and focal hepatic lesions, were described. [The SCI® indicates that this paper has been cited in over 225 publications since 1965.]

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"These studies were done because internists had trouble in differentiating focal hepatic lesions, such as metastases, from diffuse diseases, such as cirrhosis. The earlier studies were performed with a primitive rectilinear scanner jury-rigged from commercial and homemade parts put together by an engineer, James Mozley, in a small 12' x 13' room in the radiology department of Johns Hopkins Hospital. My associate, Henry Wagner, performed many of these studies alone at night, while he was chief resident in medicine. Only one near-catastrophe happened—one day, while scanning a patient, the scintillation detector came loose from its moorings with its 75-pound shield and fell, fortunately to the floor and not on the patient. Robert Ause, a resident in radiology at the time, painstakingly accumulated the clinical laboratory and pathological data on these patients.

"It is surprising that this paper has been highly cited. At that time, many other centers had similar equipment for rectilinear scanning, and the radioactive agents we used were not new. We had already published a paper on the same subject in the same journal four years previously,¹ and about 50 related papers had appeared since 1957. One equally large series of 1,000 he-

patric scans had been reported previously.² Perhaps this paper appeared at the right time, when nuclear imaging by rectilinear scanning was just becoming popular, and when no other methods for hepatic imaging were available. We did show that rectilinear scanning usually could distinguish between focal and diffuse hepatic lesions. The paper documented many normal variations in hepatic configuration and size, and systematically analyzed the abnormalities encountered in congenital and acquired lesions. Prior to this paper, it was probably not appreciated that such a wide variety of lesions could produce focal photopenic defects in liver images, and that adjacent extrinsic masses could markedly deform this organ.

"The methods described in our paper are now totally obsolete. In the intervening years, the rectilinear scanner has become a historical relic, replaced by the more efficient Anger scintillation scanner. The older radioactive agents have been superseded by Tc-99m sulfur or microaggregated albumin colloids. Although these technical advances improved the spatial resolution of radionuclide images, the objective findings in various hepatic lesions have not changed markedly. Despite the advent of competing non-invasive modalities (ultrasonography, computed tomography, and magnetic resonance imaging), radionuclide imaging still has maintained a role in the investigation of liver disease.³

"Wagner has received numerous awards including the George von Hevesy Medal from the Gesellschaft für Nuklearmedizin, the Hevesy Nuclear Pioneer Award from the Society of Nuclear Medicine, and the Francis E. Schwenker Award of Johns Hopkins Hospital. I have received a Gold Medal Award and the Paul C. Aebersold Award from the Society of Nuclear Medicine and a Designated Scholar Award from the State University of New York. We both have received the Hermann L. Blumgart Award of the New England Chapter, Society of Nuclear Medicine. We suspect that these awards were not granted on the basis of this particular paper."

1. Wagner H N, Jr., McAfee J G & Mozley J M. Diagnosis of liver disease by radioisotope scanning. *Arch. Intern. Med.* 107:324-8, 1961. (Cited 95 times.)
2. Nagler W, Bender M A & Blau M. Radioisotope photocanning of liver. *Gastroenterology* 44:36-43, 1963. (Cited 140 times.)
3. McAfee J G, Grossman Z D, Winstow B W, Bryan P J & Cohen W N. Relative merits (computed tomography, ultrasonography and nuclear medicine in disease of the liver and biliary tract). (Margulis A R & Burhenne H J, eds.) *Alimentary tract radiology. Volume III. Abdominal imaging.* St. Louis: Mosby, 1979. p. 226-47.