walls, floor, and ceiling. This work to increase the sensitivity of the gamma-ray measurements was primarily under the direction of C.E. Miller.

- Subtraction, from the gamma spectrum of a radium-contaminated individual, of the contribution from ^{40}K as detected by the NaI(Tl) crystal allowed measurement of 5×10^{-9} Ci of RaB,C with an accuracy of about 5%. The amount to be subtracted for each individual was determined after ingestion of a small quantity of the short-lived isotope ^{42}K to evaluate the total body potassium.

- The work revealed that the NaI(Tl) spectrum of unexposed individuals was changing during 1955 and 1956. This change was due to the appearance of an additional photopeak in the spectra, which grew in magnitude during this period and was subsequently found to represent ^{137}Cs from the testing of nuclear weapons.

A study initiated during this period primarily at the urging of Marinelli concerned the metabolism of radium in bone. Hoecker and Roofe (1951) had published alpha-track autoradiographs made from bones from former dial painters. The number of tracks and hence the concentrations of radium varied widely from one microscopic area of bone to another. At about the same time, A. Engstrom in Sweden and R. Amprino in Italy had made microradiographs of thin slices of bone and had shown that the density changes in bone (recorded on the high-resolution X-ray images) clearly detailed the structure of bone on a microscopic scale (Engstrom 1946; Amprino and Engstrom 1952). Marinelli suggested that the two techniques, applied to a single section of bone, might make it possible to understand the metabolism of radium in bone at the histologic level. He asked Rowland to investigate these techniques, which ultimately brought to the study a much clearer understanding of the uptake and retention of radium in bone.

A tentative start in this area was underway by 1952, but real growth took place after John Marshall joined Argonne in 1955 and Jennifer Jowsey arrived in 1956 on the first of two multiyear visits from Oxford University. Two parallel concepts were investigated: the damage done by radium deposited in bone (Rowland et al. 1958, 1959b) and the relationship between the level of a radioactive isotope in blood and the level of the subsequent deposition in bone. The latter investigation required, in addition to the straightforward radiochemical measurement of radioactivity in blood (Lucas et al. 1970), measurement of both the mass of mineral and the level of