of deflection of the incident radiation; it is independent of the energy of the incident X-rays. The most important result from the observation of Compton scattering was the establishment of the quantum properties of the photon itself, rather than any new insight into the structure of the atom. In fact, in the original Compton scattering experiments it would have made little difference if the electrons on which the scattering took place were free or were bound to the nucleus.

The power of Compton scattering in analysing not only the structure but also the internal dynamics of atoms became evident with the experiments of J. W. M. DuMond and collaborators starting in 1926, which observed the frequency of scattered photons with much higher precision. These experiments revealed not only that scattering of incident photons on atomic electrons indeed took place, but also that these electrons

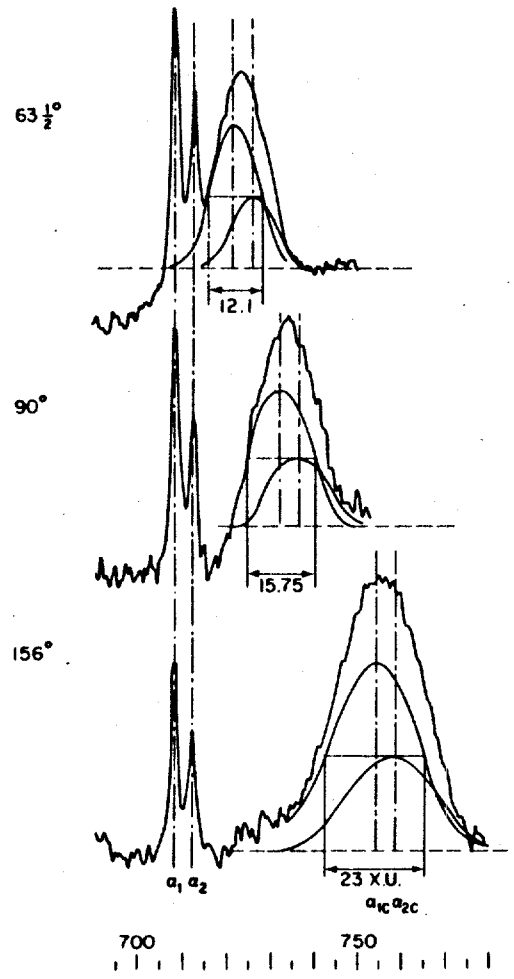

Fig. 4. Microphotometer traces of photographic spectra obtained in the multi-crystal spectrometer of DuMond and Kirkpatrick. The spectra show on the left the unmodified molybdenum K_{α_1} and K_{α_2} lines, together with on the right the Compton-shifted line as scattered from graphite at various angles. Note that the broadening as well as shift itself increases with the scattering angle, as expected by theory. (The scale at the bottom is graduated in ~~x.v; 1 × x.u ~ 10^{-13} m.)~~
X.V.; 1 × X.U. = 10^{-13} m)