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Professor Mike Williams
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Dear Professor Williams:

Bravo! I have finally read the material about the Montreal Project, and I was enormously impressed both by the elegance of Placzek's group's papers, and by your diligence in ferreting them out and putting them together. You have done a wonderful service for the future generations of reactor physicists.

I hardly recognize the young Alvin Weinburg in the 1943 photo of the Montreal staff. I spent about two weeks in Montreal, mainly to convey to Placzek and Volkoff the methods Wigner had developed for designing the graphite reactor both at Oak Ridge and Hanford. All our calculations were based on first order diffusion theory, although around this time Wigner and I did a spherical harmonics estimate of the thermal utilization in parallel plates. Wigner always argued that since the thermal distribution of the slowed neutrons was essentially unknown to do P_n calculations was unnecessary. I recall that Placzek in visits to Chicago astonished us with the cleverness of the Wiener – Hopf methods used in Montreal but he borrowed the P_n formulations from Chicago, and performed beautiful calculations with it. Many years later I discovered spherical harmonics expansion of flux in Wigner and Breit's 1942 paper "Radius of sphere sufficient for chain reaction in light isotopes" (pp. 142-148 in The Collected Works of Eugene Paul Wigner, Volume V, Part A). The paper was actually written in 1941 and possibly even earlier.

Your account of MT 499, Fast Fission in Tubes, by Guggenheim and Pryce brings back memories of the only computational mistake Eugene Wigner ever made during the war years. He had devised a cute way of reducing the fast effect problem with its basic transport kernel $\frac{e^{-\sigma r}}{r^2}$ to the much simpler diffusion kernel $\frac{e^{-\sigma r}}{r}$, and then integrating over σ. What Wigner actually calculated was the fast effect in a solid rod with a ring of fast neutrons as a source, not a tube with uniform source. The Chicago report CP-644 was based on Wigner's error. I'm afraid we stood in such awe of Wigner that we overlooked his error.

I think I visited Montreal twice – once before the break between UK and US (as evidenced by the photograph) and once after the break was healed.

Again thank you very much for bringing back memories of those stirring war-time days and for reminding us of the major contributions of the Montreal group!

Sincerely,

Alvin M. Weinberg

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