

An Addition to the Obituary of John Daniel Gilpatrick

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All of John D. Gilpatrick's friends and associates, some going back many years, were greatly saddened by his premature death. The excellent obituary by Abawi et al (1) described John's warm, friendly, and caring personality and presented some of the reasons for his stature as a scientist. Unfortunately, it omitted mention of an early stage of his career during which he worked for the Canada Department of Agriculture as a plant pathologist and particularly, John's contribution as codiscoverer of a phenomenon known as "acquired resistance" in plant virology which is still a subject of active research and much discussion and speculation.

In fact, John Gilpatrick worked very productively for the Canada Department of Agriculture from 1947 to 1948 and again from 1950 to 1952, at what was then called the Dominion Laboratory of Plant Pathology in St. Catharines, Ontario. He later told me that those years were professionally among his happiest; I believe that his departure to Colorado was motivated solely by his deep love and concern for the health of his family.

While John was at St. Catharines, I was privileged to be closely associated with him. We worked on a number of plant virus problems, most of which related to virus inhibitors and mechanisms of interference with virus infection. We discovered "an unusual type of protection" in *Dianthus barbatus* inoculated with a carnation virus: after the production of viral local lesions, the uninoculated leaves on the test plant were resistant or immune to infection by the same virus (2).

C. E. Yarwood and A. F. Ross immediately became interested in this phenomenon, and Yarwood first referred to it in this context as "acquired resistance" and "acquired immunity" (9,10). Yarwood showed in these publications that, in addition to our systemic form of acquired resistance, which induced long-distance protection, there was also a localized effect which was detectable very close to the initial lesions. Ross and his students studied both the localized and systemic forms of acquired resistance (3-6).

Yarwood and I often discussed acquired resistance during my sabbatical leave in 1956 in Berkeley. He said that John and I had not been sufficiently bold in our paper in *Science*, and that we should have named the protecting substance(s) "plant antibodies," as he had done (9), since we implied that such substances were involved. In retrospect, it is probably just as well that we did not do so, since the term later applied by Sela and Applebaum (7)

"antiviral factor(s)" carries fewer implications about origin, chemical composition, and mechanism of protection from reinfection than does Yarwood's proposal.

Although John left St. Catharines soon after the discovery of acquired resistance, our discussions on this new form of interference led W. G. Kemp and me to carry out further experiments which resulted in the confirmation that this was not simply a variant form of "cross-protection" (the only type of protection against, or interference with, plant virus infection known at that time), but rather that the protection was conferred by a substance that could pass across a graft union, and interfere with infection of a previously unprotected member of the graft (8).

Yarwood's prediction that this discovery would open a new and fruitful area of research has been amply borne out by the publication of several hundred research papers, as well as a number of extensive review articles, and graduate theses on the subject. This includes, of course, some publications on the so-called 'b' proteins that are associated with this protection phenomenon, the significance and function of which are still a source of puzzlement and debate. Because this is an increasingly active area of research, it would be unfortunate if John D. Gilpatrick's role in its discovery was not recognized in a review of his scientific achievements.

LITERATURE CITED

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