against this that Emmy Noether protested. What she protested against was the pessimism that shows through the last words of the quotation from Weyl's speech of 1931; the substance of human knowledge, including mathematical knowledge, is inexhaustible, at least for the foreseeable future—this is what Emmy Noether firmly believed. The "substance *of the last decades*" may be exhausted, but not mathematical substance in general, which is connected by thousands of intricate threads with the reality of the external world and human existence. Emmy Noether deeply felt this connection between all great mathematics, even the most abstract and the real world; even if she did not think this through philosophically, she intuited it with all of her being as a great scientist and as a lively person who was not at all imprisoned in abstract schemes. For Emmy Noether mathematics was always knowledge of reality, and not a game of symbols; she protested fervently whenever the representatives of those areas of mathematics which are directly connected with applications wanted to appropriate for themselves the claim to tangible knowledge. In mathematics, as in knowledge of the world, both aspects are equally valuable: the accumulation of facts and concrete constructions and the establishment of general principles which overcome the isolation of each fact and bring the factual knowledge to a new stage of axiomatic understanding.'

One must be grateful to Auguste Dick, to her competent translator, to her many helpers (e.g. Olga Taussky) and to the publisher for submitting to the English reader a lively and well-researched report on the life and work of a mathematician whose scientific influence is with us every day but whose life had become a legend already in my student days.

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Product integration, by John D. Dollard and Charles N. Friedman, Encyclopedia of Mathematics and its Applications, Vol. 10, Addison-Wesley, Reading, Mass., 1979, xxii + 253 pp., $24.50.

The idea of product integration was first introduced by Volterra in his study of the evolution differential equation

$$dy/dt = A(t)y. \tag{1}$$

Let us consider the case where A maps an interval $[a, b]$ into the set of linear operators on a normed vector space $(X, \|\cdot\|)$ and y has the initial value