



ordinary talent for original mathematical approaches to ecological problems became apparent unusually late, after the age of 35. He came to be held in high respect by more professionally trained experts in the same field. Hundreds of research workers at the bureau and elsewhere are in his debt for shrewd and patient advice, often also for such careful examination and computation of their figures. His tall figure, quiet manner, friendliness to people of all ages, whimsical humour, and incisive intellectual powers became, so to speak, an institution within the research institute. On matters of scientific integrity he was adamant, and many young and some older research workers gained their first statistical training from him. But the advisory aspect of his activities was also important for the development of Leslie's own ideas; for he

attained a clear picture of the kind of assumptions that ecologists deal with, the long and tedious and usually incomplete nature of field studies on animal populations, and their sampling problems. Thus his own ideas always started from sound ecological premises.

Leslie's first original work on populations was the calculation of the intrinsic or natural rate of increase of a wild animal, using data for voles, *Microtus agrestis*, bred in the laboratory by R. M. Ranson. This calculation employed age-specific rates for births and deaths. Such an estimate had previously been made only for man, those for animals being fallacious guesses based upon reproductive capacity alone. Later he calculated such rates also for the brown rat, the Orkney vole and flour-beetles. The methods were quite novel for animal ecology. He went on to much more complex theoretical studies of population growth and structure (including age-distribution and generation time) and of the interactions between species. His paper "On the use of matrices in certain population mathematics" (1945) is a classical one. During the Second World War he used his skills in the bureau's team research upon the control of harmful rodent populations. In his later years he took up two chief subjects. First, the statistical basis of marking and recapturing live-trapped small rodents (but applicable much more widely) to yield population data, using the field operations of Dennis and Helen Chitty on voles. Secondly, he began a long and brilliant series of studies upon the application of stochastic equations, as compared with the more simplified deterministic types, to the elucidation of predator-prey and inter-species relations. Much of this

was made possible by the programming help of J. C. Gower on the Rothamsted computer. From 1948 onwards, Leslie formed an increasingly close association with Thomas Park of the Department of Zoology in the University of Chicago, who had for many years engaged in laboratory experiments upon competition between two species of flour-beetles (*Tribolium*). Gradually he was able to develop equations that simulated and illuminated the very complex results of some of these experiments. His whole self-made mathematical career, with its comet-like character, must have done much to make people realize the formidable complexities inherent in population ecology, and has provided valuable new tools for use in them. He gained his Oxford DSc on the published results of his various researches.

Reports and Publications

not included in the Monthly Books Supplement

Other Countries

Fisheries Research Board of Canada. Technical Report No. 318: Distribution, Relative Abundance and Growth of Larval Herring *Clupea harengus* L. in the Southern Gulf of St. Lawrence. By S. N. Messieh and A. C. Kohler. Pp. 31. (St. Andrews, NB: Fisheries Research Board of Canada, Biological Station, 1972.) [229]

Geological Survey of Canada. Miscellaneous Report No. 17: Laboratories, Scientific and Technical Services, Ottawa. By Peter Harker. Pp. 42. Miscellaneous Report No. 18: The Geological Survey of Canada. Into the Seventies—the Fourteenth Decade. By S. C. Robinson. Pp. 26. Paper 71-9: Relationships of Structural Lineaments and Mineral Occurrences in the Abitibi Area of the Canadian Shield. By Jan Kutina and Andrea Fabbri. Pp. viii+36. \$2. (Ottawa: Information Canada, 1972.) [229]

US Department of the Interior: Geological Survey Water-Supply Paper 1939-C: Electrical-Analog Analysis of the Hydrologic System, Tucson Basin, South-eastern Arizona. By T. W. Anderson. Pp. iv+34+6 plates. (Washington, DC: Government Printing Office, 1972.) [229]

US Department of Agriculture: Agricultural Research Service. Marketing Research Report No. 482: Hypobaric Storage of Mature-Green Tomatoes. By W. E. Tolle. Pp. 9. (Washington, DC: Government Printing Office, 1969.) 15 cents. [229]

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