Symposium On Research Progress in Insecticide Resistance

INTRODUCTION TO SYMPOSIUM

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This joint enterprise of the National Agricultural Chemicals Association and The Entomological Society of America is a milestone in the progress of economic entomology, and I feel very privileged for the opportunity to participate in it. The subject of insect resistance to insecticides continues to be one of the most intriguing biological problems of the twentieth century, dealing as it does with such remarkable demonstrations of natural selection, population genetics, behavioristic mechanisms, and biochemical detoxications. At the same time, this problem provides an imperious challenge to our ingenuity, in striving to maintain the bright promise of pest control that has existed since the advent of organic insecticides. To my mind this challenge is best exemplified by the contrast in the efficiency in the control of the house fly (Musca domestica L.) by DDT in 1945 and the situation which exists in many areas today. It is almost unthinkable that we should be forced to abandon a step in scientific progress which has brought so much peace and comfort to humans and domestic animals about the world.

Insecticide resistance in insects of public health importance was first demonstrated in 1946, with the discovery of the DDT-resistant house fly. In the dozen years that followed, resistance has appeared in many of the important mosquito, fiea, and louse vectors of human disease, and the resistance problem has been clearly recognized by national and international agencies as a subject of great importance to human welfare. Under the leadership of the World Health Organization and other agencies, study groups and symposia have met in several countries. These gatherings have provided the opportunity for the relatively small group of scientists engaged in the intensive study of the resistance problem to discuss their latest findings and the overall implications of these, with highly influential leaders of scientific research. As a result of the sharp focus into which this problem has been placed in the realm of public health, substantial sums of money have been made available for continuing research on the problem and ever increasing groups of able investigators have devoted their talents to study of its manifold facets.

Regrettably, no such unanimity of effort has

been devoted to the study and solution of the resistance problem in agricultural pests, although its existence was forcefully demonstrated with lime sulfur spray for San Jose scale (Aspidiotus perniciosus Comst.) in 1914, hydrogen cyanide fumigation for California red scale (Aonidiella aurantii (Mask.)) in 1916, and lead arsenate spray for the codling moth (Carpocapsa pomonella (L.)) in 1917. In the intervening 45 years additional cases have been discovered until a recent 1958 report lists more than 50 agricultural pests in which significant immunity to one or more insecticides has been proved. The practical consequences of this alarming development in terms of the increasing world need for agricultural production can scarcely be overemphasized. It is apparent that we are rapidly expending one of man's major scientific resources, modern insecticides, to the decided detriment of not only the producer and consumer of foodstuffs but also the great chemical industry concerned with the discovery and development of insecticides. It seems to me, therefore, that it is rather more than timely that we are gathered here today in the first really ambitious attempt on the part of American Economic Entomology and Agricultural Chemical Industry to devote to this problem the serious consideration which it so obviously deserves.

I am confident that during the next 2 days as we consider the important scientific papers presented here by an exceptionally able group of scientists, and listen to the provocative discussion which their context is certain to evoke, we shall have taken a major step in equipping ourselves with the informative background and pervasive enthusiasm which are so necessary to ensure the urgently needed mobilization of the scientific talents and matchless resources of our industrial and governmental research to combat the resistance problem.

In concluding these introductory remarks, I should like to stress the view of the Planning Committee that this Symposium should have specific objectives in shaping thought and action directed toward the solution of the resistance problem. Those objectives that were immediately obvious are:

(1) The presentation and exchange of information between research scientists actively engaged in study of the resistance problem and directors of research and high level administra-

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