COMMENTS

Scientific knowledge increases unevenly so that at any given time some areas are developing slowly while others progress rapidly. While slowly developing areas lend themselves to definitive review, it is when knowledge is increasing rapidly that discussion is most fruitful. The main theme linking this session's papers is that they mostly deal with subjects where both information and opinions are changing. It is no disservice to the contributors to suggest that most of them would have rather different accounts of their subject two or three years ago. Moreover, they may have a modified story to tell in two or three years time.

Ed Bond rightly emphasises that the best place for pesticides is in the insecticides store not the food store. We should prevent infestations by better storage practices and well designed facilities, and thus restrict the need for insecticides. However, pesticides are likely to remain essential and when we do use them we need to apply the right compound in the most efficient way.

Views as to the appropriate compound change. A few years ago the insecticide used was often an organochlorine and this was particularly the case with non-edible stored products like hides, skins, and textiles. Weight for weight these are more valuable than stored cereals and damage can result in heavy financial loss. Roy Bry has shown that some organophosphorus compounds and pyrethroids are viable alternatives as moth-proofing agents. We tend to think of organophosphorus compounds and particularly of pyrethroids as relatively labile compounds, and I must confess I was rather surprised at these results. However, now that even more stable pyrethroids have been developed there may be more surprises in store.

Two of our speakers are concerned with improving contact between insecticides and insects. Not long ago the aim in applying grain protectants was an even distribution throughout the grain. Bill Minett and his colleagues have stood this philosophy on its head. They have shown that at least in some circumstances non-uniform treatments with malathion are not only fully effective but may last longer. David Pinniger has shown that with treated surfaces insects are much less readily killed if they have a refuge in which to hide. This is scarcely surprising, but he has also demonstrated that a resistant strain tended to remain in a refuge longer than did a susceptible strain. A biochemical mechanism of resistance can therefore be reinforced by behaviour which would not be detected by standard resistance test methods.

But once the insect and toxicant have been brought together our problems are not over. Johnathan Banks shows how much we have to learn about the uptake and toxicology of phosphine. Despite its widespread use we know very little about how this remarkably toxic gas kills pests. Strains tolerant to phosphine have been produced by selection with methyl bromide, and pyrethroids as well as phosphine. Studies on the mechanism of inaction in such strains may well help us to understand how phosphine kills. As with many contact insecticides it may well be that our knowledge of the mode of action of fumigants remains meagre until the insects have evolved mechanisms which render them ineffective.

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