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A short history of the

PESTICIDES GROUP

1954 - 1994

by Maurice B Green

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Until World War 2 pesticides were mainly inorganic chemicals such as lead arsenate and sulphur together with a few natural organic chemicals such as nicotine and pyrethrum. The discoveries of DDT in Switzerland, of the organophosphates in Germany and of the phenoxyacetic acids in Britain were the foundations of the modern pesticides industry based on increasingly complex organic chemicals. The discovery by Geigy of the insecticidal properties of DDT were conveyed to the British authorities early in the war by George Campbell of Geigy UK and a special team was set up at the Ministry of Production under Sir Ian Heilbron which included Henry Wigglesworth, Neville Woodward and Richard Christopher. They rapidly got DDT into production to protect our military personnel and, later, also the civilian populations in the liberated areas of Europe, against insect-borne infections. I well remember the day I was working at my bench as a young research chemist and a whisper went round that a wonderful chemical to destroy all insects had been discovered and a piece of paper was passed from hand to hand with the formula of DDT. I remember that I was surprised that a compound with such amazing properties should have so simple a structure. Today, as pesticides have increasingly complex structures, I still wonder how many comparatively simple compounds there are which might have biological properties as remarkable as those of DDT. Soon after the introduction of DDT the wits of the day produced the limerick :

An insect was heard to complain
These scientists give me a pain
The cause of his sorrow
Was alpha trichloro -
dichloro-diphenylethane

There was great euphoria that the insect problems of the world were now completely solved. Over the years since then an awareness has developed of the ability of biological populations to develop resistance to chemicals which interfere with specific biochemical processes and of the possible effects of chemicals and their metabolites on the eco-system. This awareness has resulted, amongst other things, in the withdrawal of DDT from use. Pesticide science has developed from an empirical search for biologically active compounds, the mode of activity of which was elucidated only after their discovery and which were marketed after only simple toxicological tests and few, if any, studies on their environmental effects, into systematic computer-guided search for compounds to interfere with specific biochemical processes, physicochemical and biophysical studies of the application, absorption and translocation of these compounds and far-ranging studies of their effects on human and animal health and on their fate in and effects on the environment. These changes have been mirrored over the past forty years by changes in the subject matter of meetings of the Pesticides Group. Pesticides were originally a discovery of the chemical industry and the organic chemist was paramount. Now the organic chemist is but one of a team which includes physical chemists, mathematicians, biochemists, biophysicists, biologists, ecologists, soil scientists, etc. This fact is reflected in the scientific disciplines of present members of the Group compared with those of the members of forty years ago. This short history of the Group and the appended details of the meetings held by it during the forty years of its existence by one who has been part of it for the whole of that time will, I hope, serve to exemplify this evolution.

The discovery of DDT stimulated a growing interest in pesticides which was heightened by the discovery in Britain by Imperial Chemical Industries of the phenoxy herbicides and by the disclosure of Schrader's work for Bayer in Germany on the organophosphates by the allied investigating teams. At the end of the war the Ministry of Production team for DDT was disbanded and it became apparent that these new pesticides did not fit comfortably into the remit of any Ministry so an inter-departmental committee was set up at the Agricultural Research Council to deal with them. The Secretary of this Committee was Dr R A E (Bob) Galley.

None of the scientific societies had yet taken this new technology on board. Within the Society of Chemical Industry any matters concerning pesticides were dealt with by the Agriculture Group. Scientists in Belgium were quick off the mark and organised the first international Congress of Crop Protection at Luvain in 1946. Bob Galley was there on behalf of the Agricultural Research Council and he and I talked about the future and both felt that the next Congress ought to be in England. So, Bob stuck his neck out and offered to have the second Congress in London in 1949. Having made that commitment the problem was : who was going to organise it ? Bob was a member of the Agriculture Group of the Society and also a member of Council to whom he suggested that, as the Society was affiliated to IUPAC, it was the appropriate body to sponsor this meeting. Leslie Lampitt, who was President of the Society at that time, reacted enthusiastically and arranged a series of working dinners at the Trocadero restaurant where interested people like myself met to organise this Congress.

The Congress, held in 1949, was a great success and the Agriculture Group of the Society decided to set up a Crop Protection Panel. The inaugural meeting was held in the rooms of the Royal Institution in Albemarle Street on 27 April, 1950. Dr Lampitt presided and he said in his inaugural address that the recent Congress had stimulated the thought in peoples' minds that the subject of crop protection was of such importance that it was necessary for a special band of people to get together to study it in all its aspects. The formation of a new Society had been hypothecated but, as most people were against the multiplication of societies, it was felt that, under the aegis of the Society of Chemical Industry and through its Agriculture Group, a panel might be formed which would conveniently fill the gap.

I think that Leslie Lampitt, like myself and the 31 others who were present at that inaugural meeting, had no real concept of just how big that "gap" which we were filling would eventually turn out to be. But I think that possibly Bob Galley, Gerry Baldit, Louis Wain and myself had some inkling for we fought very hard to keep pesticide science for the Society and the words of Leslie Lampitt's inaugural speech do not adequately convey the bitter in-fighting that went on to achieve this object.

The inaugural lecture of the Panel was given by Dr Hubert Martin of Long Ashton Research Station on " Advances in Chemical Methods of Crop Protection ". Hubert Martin was the doyen of British pesticide scientists and, although his definitive book "The Scientific Principles of Plant Protection " (1928) was mainly concerned with inorganic chemicals, it is surprising how he foreshadowed the increasing importance of organic chemicals and, even more surprisingly, of methods of biological control such as introduction of natural predators, use of bacteria and polyhedral viruses, use of pheromones and the concept of integrated control.

At the inaugural meeting the following committee was elected :

Chairman	K Piercy	Albright & Wilson Limited
Hon. Secretary	R A E Galley	Agricultural Research Council
Hon. Treasurer	W H Read	Cheshunt Experimental Station
Hon. Recorder	G L Baldit	Plant Protection Limited
Committee	R L Wain	Wye College of Agriculture
	N K Smith	Murphy Chemical Company

Amongst the 32 members at the inaugural meeting were :

R de B Ashworth, F P Coyne, M Elliott, M B Green, G S Hartley, H Hayhurst, H Martin and E E Turtle.

On 15 June, 1950 the Panel paid its first summer visit to the research station of Shell Chemical Company Limited at Woodstock Farm, Sittingbourne and were welcomed by Dr J E Hardy the Head of the Agricultural Sector of Shell Petroleum Company. 25 members travelled by coach from London and we all had a good time.

The Panel proceeded to be very active and held many meetings and attracted many new members to the Society so that by 1954 it had increased to 218 registered members. At the fourth Annual General Meeting on 12th April, 1954 with Bob Galley in the chair, the Secretary Gerry Baldit announced that a recent questionnaire to members of the Agriculture Group had revealed a large number of members whose main interest was in pest control. With the concurrence of the committee of the Agriculture Group an application for variance of status had been made to Council who had agreed that the Panel should become a Group. (It is possible that the fact that the President at that time was Sir William Ogg, the Director of Rothamsted Experimental Station, may have helped to facilitate this decision). Bob Galley then gave a talk on " Some Pest Control Problems in the Colonies ".

The inaugural meeting of the Pesticides Group was held at 6pm on 18 October, 1954 at the Royal Institution in Albemarle Street and was presided over by Sir William Ogg who said " In 1949 the Society willingly accepted an invitation to act as sponsor of the 2nd International Congress of Crop Protection in London. One of the results of the Congress was the establishment of a Crop Protection Panel of the Agriculture Group. This Panel immediately demonstrated the wisdom of establishing it. The programmes were attractive, it was extremely virile and it attracted many new members to the Society; indeed, so great was its success that it became abundantly clear that its elevation to Group status was fully justified and that the Group will play an important part in the future of the Society. Ours is one of the least static of industries. New products and new processes are constantly being introduced and we must keep pace with the changes and cater for the needs of those engaged in these fresh enterprises. Unless we do so we are failing in our duty, and other organisations will be set up outside our Society ". It seems to me that these words are just as pertinent for the Society today as they were then.

The theme of the inaugural meeting was the Crop Protection Products Approval Scheme and three papers were given :

- " How the scheme was founded " by Professor J W Munro, Chairman of the Advisory Group "
- " The structure and operation of the approval scheme " by Dr de B Ashworth, Secretary of the Advisory Group
- " Administration of the scheme from the Government Chemist's angle " by Mr J King, Government Laboratory

It is noteworthy that the first meeting of the Pesticides Group was concerned not with synthesis and activity of pesticides but with their safety to the public and to the environment, which belies the common accusation that earlier pesticide scientists were concerned only with activity and that concern for human, animal and environmental safety is a recent concept.

After the inaugural meeting a dinner was held at the Park Lane Hotel which was attended by Sir William and Lady Ogg and by 100 members. I remember that the cost of the dinner was 25 shillings, but then my salary was 800 pounds per year.

Thus was the Pesticides Group launched and its subsequent history can be traced in the rest of this document. It is appropriate to reproduce here the editorial published in Chemistry & Industry on 31 July, 1954.

THE PESTICIDES GROUP

The healthy and progressive outlook of our Society is illustrated by the elevation to Group status of the Crop Protection Panel of the Agriculture Group. The new Group will be known as the Pesticides Group and its terms of reference will be "to consider all scientific matters concerned with the production and use of pesticides in the fields of agriculture, horticulture, veterinary science, stored products and public health. The word "Pesticide" shall be defined as including the following: insecticide, acaricide, nematocide, fungicide, herbicide, rodenticide".

Membership of the Pesticides Group is open to any member of the Society. It is achieved automatically by any member who, at the time of his candidature for membership of the Society or subsequently, indicates to the General Secretary his wish to be a member of the Group.

The draft rules of the Pesticides Group state that it "may carry out its objects by holding meetings, alone or jointly with other Groups, local Sections of the Society or other bodies; by presenting for publication, in the Society's journals or otherwise, the reports, full or abridged, of the proceedings of such meetings and by encouraging contributions of a similar character; by encouraging or assisting the preparation of indexes or other classification of literature for the convenience of members' reference; by arranging visits to works, research establishments, etc., calculated to be of benefit to members; and by other means, not conflicting with the objects and constitution of the Society, to advance the scientific aspects of the use of pesticides".

Thus we welcome the latest addition to our Subject Groups the setting up of which is an excellent example of the flexibility of the Society. Its future is without doubt bright.

Readers of this history of the Pesticides Group may care to form an opinion on the extent to which the Group has achieved its objectives as defined by the draft rules during the past forty years. It is interesting to speculate what "other means" the compilers of the draft rules visualised to advance the scientific aspects of the use of pesticides. Although I was there at the time I have no idea what we had in mind. Possibly an annual festival such as the Robigalia of the Romans which involved vestal virgins and was aimed at control of wheat rust. Possibly the dance of naked virgins in the fruit orchards in Elizabethan times on midsummer eve which was said to cause caterpillars to drop off the trees.

Be that as it may, we shall now proceed to a consideration of what the Group actually has achieved in the past forty years.

The first Annual General Meeting of the newly formed Pesticides Group was held in the rooms of the Chemical Society on 18 April, 1955. Since its inauguration in October, 1954 membership of the Group had increased by 18 to 262. The following Committee was elected :

Chairman	:	Dr R A E Galley
Vice-Chairman	:	Dr F P Coyne
Hon. Secretary	:	Mr G L Baldit
Hon. Treasurer	:	Mr W H Read
Hon. Recorder	:	Dr E E Turtle
Committee	:	Dr J Allen
		Dr R de B Ashworth
		Dr J R Boorer
		Dr J K Eaton
		Dr M B Green
		Mr N K Smith

Gerry Baldit gave a lecture on " The Development of a New Pesticide." In view of my comments in the Prologue about the changes in the past forty years it is interesting to recall some of the points made in this talk which was by a very experienced pesticide scientist and reflected the state of the art at that time. Gerry said that new pesticides are generally developed by synthesis of new compounds by the organic chemists and random testing of these by biologists. But he did surmise that eventually active pesticides might be synthesised on the basis of the contribution to biological activity of particular structural groupings. He emphasised the importance of the part played by physical chemists in formulating the compound into a form in which it can be handled readily and applied effectively. As a result of all the work needed, five to ten years may pass from discovery of activity to marketing on a full commercial scale.

In the discussion members said (a) that there was an outstanding need for chemicals with toxicities selective to particular species (b) that more knowledge of the modes of action of pesticides was needed before active compounds could be produced deliberately (c) that the future of pesticide research lies in a joint approach by chemists, biochemists and biologists (d) that public opinion will demand more work to be done on safety of pesticides in food and in the environment. It would appear that the members of the new Group were far-sighted in their ideas.

The new Committee rapidly got down to work. As the Panel and subsequently the Group were products of the 2nd International Congress of Pesticide Chemistry organised by the Society in 1949 the Committee decided that the Group should take a major part in the organisation of future Congresses and be the sponsors when the Congress was held once again in London. In the event, although members of the Group played a part individually in the organisation of these Congresses - and still do - the Pesticide Group and the Society have played no part as corporate bodies, and the Congress has not been held again in England.

A firm decision by the Committee was that the Group would arrange a national conference each year on " Practical Aspects of the Use of Insecticides and Fungicides in Agriculture and Horticulture " and that the first conference would be held from 31 October to 3 November at Eastbourne. In the event this conference was held under the title " The National Crop

Protection Conference " and was organised in collaboration with the Ministry of Agriculture, Fisheries and Food and a number of Trade Associations. Over 420 people attended this conference which was opened by the President of the Society of Chemical Industry, Dr J M Leonard. I remember that a particularly attractive feature of this conference was that, at the conference dinner and dance, a host of pretty young nurses from the Eastbourne hospital were brought in to act as partners for the predominately male delegates. Possibly the military background of the Group Secretary, Major Gerry Baldit, made him think in terms of comforts for the troops.

Unfortunately the Committee came to the conclusion that it had bitten off more than it could chew in contemplating arranging a national conference of this type every year. No further action was taken until 1958 when the first British Weed Control Conference was arranged by the Group jointly with the British Weed Control Council and took place at Brighton on 20 to 22 November. Thus was the date and venue of the annual Brighton conference established but control of the conference passed to the British Crop Protection Council and the Group and the Society played no further corporate part in its organisation although many members of the Group play an active part as individuals.

Apart from these rather grandiose hopes of the original Committee that the Pesticides Group would become the premier body for pesticide science in the United Kingdom the activities proposed for the Group were evening lectures, an annual social evening, an annual dinner and an annual visit to a research establishment. When the Group was founded the Society had business headquarters in Victoria Street but no adequate facilities for holding scientific meetings. So the Group held its meetings originally in the rooms of the Chemical Society. In those days the Society was not a commercially orientated arranger of conferences but something like a cross between a learned society and a gentleman's club presided over by a perfect officer and gentleman Lt. Colonel Francis Griffin. The purchase of 14, 15 and 16 Belgrave Square in 1956 while Dr John Rogers was President was intended to enhance this image and little consideration was given to facilities for meetings. The Society had local Sections covering all parts of the United Kingdom whose object was to advance the application of science to industry by arranging evening talks to members and their guests on various aspects of industrial science at a level which would be comprehensible to any trained scientist but without too detailed technical content. The subject Groups were of more recent origin but had the same format of evening meetings but with a somewhat higher technical content. Admission to all meetings was free to members and their guests. The individual Sections and Groups managed their own finances. They were given a block grant each year based on membership and, provided they broke more or less even at the end of the year, they were free to undertake whatever activities they wished as long as these did not conflict with the objects and constitution of the Society. All-day meetings and multi-day conferences were a rarity.

A full list of all the evening, one-day and multi-day meetings organised by the Pesticides Group in the past forty years is appended. It will be seen that, in the first decade, 63 evening meetings were held covering a very wide range of subjects. In accordance with the Group's objects some of these meetings were held jointly with local Sections including Glasgow, Manchester and Aberdeen, and some with other Groups

including the Agriculture Group, the Colloid and Surface Chemistry Group, the Microbiology Group, the Corrosion Group and the Fine Chemicals Group.

The first one-day meeting of the Group was held jointly with the Association of Applied Biologists on 9 January, 1956 on "Resistance of insects to insecticides" and was attended by over 200 people. This choice of topic and the size of the audience showed a realisation even at this date that resistance would become a major and growing problem in pesticide use in the future. Only five other one-day meetings were held in the first decade. A meeting on pyrethrum in 1959 gave no hint of the synthetic pyrethroid explosion following Michael Elliott's discovery of permethrin in 1973. The other meetings were on industrial weed control, problems of the sugar beet crop and special techniques in residue analysis.

The first multi-day meeting of the Group was held on 11 and 12 December, 1956 on "Comparison of high and low volume spraying techniques on fruit and ground crops". This was held at the request of the Crop Protection Approvals Committee of the Ministry of Agriculture, Fisheries and Food and was attended by 150 people. A second multi-day meeting was held on 20 and 21 October, 1957 jointly with the Association of British Insecticide Manufacturers on "Residues of pesticides in fodstuffs" and was over-subscribed as 150 people attended but 60 more had to be refused. This shows what a "hot" topic this was even then. Two other multi-day meetings were held in the first decade, on pests of stored products, attended by 120 people and on fungicides in agriculture and horticulture, attended by 130 people. It is interesting to note that attendances at the one day and multi-day meetings in this decade were of a size that would be considered very acceptable nowadays.

Every year in the first decade a visit was made in the summer to a research establishment. A list of these is appended. These visits were continued until 1978. The reason why they were then discontinued is not clear but was probably because of a reluctance of firms to spend money on the entertainment of visitors and to allow staff to spend time showing these visitors around in times when economic pressures were increasing and economy was the order of the day. Or an increasing security consciousness in a highly competitive industry may have had an influence. Or it may just have been that the Group had visited all pesticide research establishments in Britain and had run out of ideas.

Also, every year in the first decade an annual dinner was held. These dinners were continued until 1980. The reason why they were then discontinued may have been the great increase in cost of a dinner in central London but may also have been associated with the change in the Group and Society from a sort of club for members and their guests to attend "popular" lectures on scientific subjects and to socialize into an organisation for expert meetings on specialised subjects. This was probably also the reason why no more social evenings, film shows, etc. were held by the Group after the first decade.

An interesting innovation in 1958 was a *conversazione* held for two days at Belgrave Square entitled "New Techniques in Pesticide Research". Exhibits of interesting and novel apparatus and of new methods of research were provided by industrial firms, research establishments and laboratory suppliers. About 200 people attended each day and this was the first time a function of this kind had been held in Belgrave Square which had only recently been acquired for the Society. As far as I know, it was never repeated although it was very successful.

PESTICIDES GROUP SUMMER VISITS

8.

- 20.06.54 Plant Protection Limited., Fernhurst, Surrey
- 19.06.55 Woodstock Agricultural Research Centre, Sittingbourne, Kent
- 07.07.56 Wye College of Agriculture, Wye, Kent
- 21.06.57 Cooper Technical Bureau, Berkamsted, Hertfordshire
- 23.06.58 Rothamsted Experimental Station, Harpenden, Hertfordshire
- 20.06.59 Fisons Chesterford Park Research Centre, Saffron Walden, Essex
- 10.06.60 Long Ashton Research Station, Bristol
- 23.06.61 Glasshouse Crops Research Institute, Littlehampton, Sussex
- 22.06.62 Pest Infestation Laboratory, Slough, Buckinghamshire
- 14.06.63 East Malling Research Station, Maidstone, Kent
- 27.09.63 Shirley Institute, Manchester
- 19.06.64 Shell Research Limited, Sittingbourne, Kent
- 18.06.65 Weed Research Organisation, Begbroke Hill, Oxford
- 01.10.65 Knowle Farm, Mellor, Cheshire
- 17.06.66 Jealott's Hill Research Station, Bracknell, Berkshire
- 16.06.67 National Vegetable Research Station, Wellesbourne, Warwickshire
- 19.10.70 Anti-Locust Research Centre, Kensington, London
- 12.06.73 Monks Wood Experimental Station, Abbots Ripton, Huntingdon
- 14.06.74 Boots Company Animal Sciences Research Station, Thurgarton
- 20.06.75 National Institute of Agricultural Engineering
- 28.09.78 Medical Research Council Laboratories, Carshalton, Surrey

PESTICIDES GROUP STUDY TOURS TO EUROPE

- 18.06 to 20.06.69 Study tour to Holland
- 21.06 to 26.06.71 Study tour to Switzerland

During the first decade membership of the Group had risen steadily as follows :

November 1954, 244	April 1955, 262	December 1955, 274
December 1956, 287	December 1957, 312	December 1958, 323
December 1959, 341	December 1960, 362	December 1961, 381
December 1962, 404	December 1963, 421	December 1964, 440

At the beginning of the second decade I became Secretary of the Group. Two very significant developments took place in this decade. In April 1967 a three day Symposium was held on " Physicochemical and biophysical factors affecting the activity of pesticides " largely at the instigation of Spencer Hartley who was a member of the Committee at the time. Spencer was the pioneer exponent of the application of physicochemical principles to the problems of formulation and application of pesticides which had hitherto been dealt with empirically. He also realised that biophysical processes of absorption and transport of a pesticide to its site of action may affect its field performance as much, or even more, than its intrinsic activity at that site.

This Symposium was a huge success and attracted much interest. Immediately afterwards Spencer proposed that the Group should set up a separate Physicochemical and Biophysical Panel. A parallel is often drawn between pesticides and pharmaceuticals but there is the very significant difference that pharmaceuticals are generally applied very near the site of action, often by direct injection, whereas pesticides have a long way to go from spray nozzle to site of action. The analogy has been drawn that application of a pesticide is similar to a doctor standing at the corner of your street and spraying drugs into the air in hope that some may land on you and be absorbed and transported to the appropriate site of action. The importance of physicochemical and biophysical studies is clearly much greater for pesticide science than for chemotherapy. Spencer argued that appropriate papers might usefully be sought from scientists to whom pesticide science had little interest and who might not wish to address the Pesticides Group or to offer their papers to them for publication. The Group readily agreed to Spencer's suggestion and the Panel was launched immediately under his chairmanship. The subsequent history of the Panel has been one of growth and success and it has widened its field of interest to such an extent that many of its topics now have little to do with pesticide science.

The second important development that came in this decade was the founding by the Pesticide Group in 1969 of the Society journal " Pesticide Science ". Hitherto papers presented at Pesticide Group meetings were published in Chemistry & Industry. This was appropriate so long as the papers were not too technically detailed or highly specialised in content. But, as the changeover came from papers of this type to papers which were detailed and specialist and, consequently, less and less appropriate for Chemistry & Industry, fewer authors were willing to offer them for publication by the Society. Furthermore, papers on pesticide science were published in different journals according to their predominant scientific discipline, thus, chemical papers went to Journal of the Chemical Society, biological papers to the Annals of Applied Biology, analytical papers to the Journal of Analytical Chemistry, etc. This problem became even more cogent with the formation of the Physicochemical and Biophysical Panel. Our

view was that pesticide science is a convergent multi-discipline science focussing on the end object of crop protection and all matters related to it. There was, at the time, no journal dedicated to pesticide science of such a stature that authors would be pleased to publish their papers in it no matter what their predominant science, so the Committee decided to ask the Society to publish one. There followed a long and acrimonious struggle with Council and the Publications Committee who did not jump for joy at the idea and maintained that the Journal of Food and Agricultural Science could meet our needs, which it clearly could not. Finally grudging approval was given but the Publications Committee wanted to appoint an editor of their choosing. The Group Committee insisted that the whole of the new journal - editing, choice of papers, refereeing, etc - must be under the control of the Group. In the event the Committee forced their hand with a fait accompli and appointed David Woodcock as editor. The fact that Pesticide Science is now the successful and respected international journal that it is and that pesticide scientists of all types are eager to publish in it is largely due to the pioneer work of David who meticulously refereed every paper himself in addition to the independent referee and refused to lower his exacting scientific and literary standards even when the journal was struggling to attract sufficient papers to keep it viable.

The Pesticide Group had, from its inception, a consciousness of Europe as it had evolved from the hosting by the Society of the 2nd International Congress of Crop Protection. During the first decade the business of establishing the Group occupied all our attentions. In the second decade, with the entry of the United Kingdom into the European Economic Community, Europe became a more pertinent topic. There was no scientific society or association in Europe dedicated to pesticide science as a whole and we set our sights on making the Group meet that need not only for the United Kingdom but for the whole of the European Economic Community. Our first step was to show our face in Europe by substituting study tours of industrial, academic and Government research establishments in various European countries for our customary summer visits to establishments in Britain. We went to Holland in 1969 and to Switzerland in 1971. The accounts published in Chemistry & Industry of these tours is appended. These tours were well supported and very effective in establishing European contacts but they were a great deal of work for the Secretary to plan and organise, and they were not repeated after 1971. However, we invited Professor van der Kerk, an eminent pesticide scientist from Utrecht, to join the Committee as European representative which he did from 1970 to 1979. From 1979 to 1989 there was no European member on the Committee but there was a resurgence of interest in 1989 when four representatives from Europe were appointed to the Committee.

Another interesting development during this decade was the Symposium on " Technological Economics of Pesticides " at the University of Stirling in September, 1969. This was the first time that a multi-day meeting had been held by the Group in a University outside London. The Group took over the whole of a nearby hotel which had a swimming pool, a casino and a fine array of malt whiskies, and so a good time was had by all and the conference, which was attended by many people from Europe, was a great success. Possibly this was one of the reasons for the great upsurge in multi-day meetings in Universities in the third and fourth decades. The subject of technological economics was beginning at that time to attract much interest as the time between discovery and full scale marketing of

17 June to 21 June, 1969

This year for the first time the Group went abroad for its annual summer visit. The 40 members who participated travelled from England on 17 June and were based in Utrecht for the three days of their stay in Holland and travelled by coach to various centres of pesticide research.

The morning of 18 June was spent at Philips-Duphar NV research station at 's-Graveland, where the visitors were given an outline of the organisation of research within the company and a description of present work on fundamental aspects of plant physiological chemistry. Then followed a tour of the biological laboratories and greenhouses where compounds supplied by the nearby Weesp chemical laboratories are screened, and finally a visit to the well-organised experimental garden and orchard.

After lunch the party returned to Utrecht and was welcomed to the Organisch-Chemisch Instituut TNO by Professor van der Kerk. A general talk by Dr Sijpesteijn on recent fungicide work in the biochemical department was amplified by short accounts of progress in four current research programmes.

The remaining two days were spent at Wageningen, visiting what is perhaps the largest concentration of agricultural research establishments in the world. On 19 June the visitors went to the Plant Protection Service. The Director, Dr van Tiel, explained that the basic activities of the service lie in the phytosanitary and phytopharmaceutical fields, and involve the supervision of legal plant health measures, inspection of crops, diagnosis of pests, evaluation of pesticides and giving advice on methods of pest control. Mr Flipse then spoke of the work of the intimately related Pesticides Bureau; this body, of which he is the Secretary, operates the official notification and approvals scheme in Holland. A lively discussion followed and the party then toured the extensive laboratories.

In the afternoon a visit was paid to the Institute of Biological Research. The visitors were impressed by the excellent facilities available for research into fundamental effects of herbicides on plants.

The final day began with a tour of the laboratory for phytopathology where Professor Dekker and his colleagues presented accounts of their studies of systemic fungicides and the role of cytokinins and phytoalexins in plant disease. Dr Tammes then spoke about research in the adjacent entomology laboratory into the modes of action of insecticides, insect sex attractants and integrated insect control.

After lunch Professor Bruinsma of the botany department outlined research on the use of plant growth regulators in various kinds of crops and orchards. This work is guided by four working parties composed of specialists from industry and academia.

The remainder of the afternoon was spent in the orchard field station at Lienden where current projects include studies of insect population dynamics and integrated insect control in orchards, insect resistance and insect pathology.

The party was entertained most generously by the Dutch people throughout this highly successful tour and returned to England on 21 June.

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21 to 26 June, 1971

The arrangements for this tour were made primarily through the three main Swiss chemical firms with large pesticides interests, namely, Sandoz, Ciba-Geigy and Maag. The success of the visit was largely due to their friendly efforts in the preliminary stages and to their generous hospitality during the visit itself.

Within the Sandoz complex at Basle the highlights were the visit to the process research and development plant, with its impressive range of facilities, and to the new toxicological laboratories where large numbers of pathogen-free animals are bred and used in the rigorous testing programmes now obligatory for new pesticides. In the evening the visitors relaxed at Klushof farm, nestling in a delightful landscape some miles from Basle.

At Ciba-Geigy the emphasis was on chemical and residue analytical work. A new laboratory for the preparation of radio-labelled chemicals, and its associated biological laboratories drew envious comments. Residue determinations, now being undertaken on a very large scale, have become highly organised and many determinations are automated. An afternoon visit to St Aubin enabled the visitors to see the experimental farm, which is now approaching its planned operating capacity. The greenhouses with their facilities for insolation, temperature and humidity control were of great interest, as were the tropical crops.

A visit to the Swiss Federal Research Station at Chateau de Changins, near Lausanne, switched the emphasis to crops in the field. Much interest was shown in the experimental work with sex lures for trapping apple codling moth and plum tortrix moth. Vines were inspected in the field and their pest problems discussed. Viruses and mycoplasmas of various crops were also under investigation.

A brief visit to the World Health Organisation in Geneva took the form of short reports by WHO officials and discussions on the use of pesticides in mosquito and malaria control. Costs of pesticides and mosquito resistance to insecticides were two aspects which were discussed.

At the Federal Research Station at Wädenswil, near Zurich, some informal talks by members of the staff led to an exchange of information on residue problems arising from incidents in Switzerland and to a discussion of integrated control practices and fungistasis in soil.

The final visit was to Maag at Dielsdorf, near Zurich. The recently extended facilities for biological screening were examined with interest by the biologists in the party, while a later visit to the formulating and packaging plant stimulated the chemists. Both parties were impressed by the computerised store. A visit to Dielsdorf experimental farm provided a comparison of integrated control programmes on apples and also a glimpse of the many other projects under investigation.

The use of so-called Bordeaux and Burgundy mixtures as vine fungicides in the 19th century had much to do with the establishment of the pesticides industry and current usage on vines still constitutes an important commercial outlet. It was fitting therefore that each visit (except, significantly, to the WHO) should culminate in an official wine-tasting and that, on each occasion, it was unanimously agreed that the local wines are worthy of the high quality pesticides produced in Switzerland.

pesticides and pharmaceuticals was becoming increasingly longer and the capital investment was becoming increasingly larger so there was a need for valid techniques to assess potential return on this investment and the financial risk involved. Technological economics provide one difference between pesticides and pharmaceuticals from a manufacturer's viewpoint. If a drug is life-saving and if the manufacturer has a patent monopoly he can add whatever profit he sees fit to the works cost to give the selling price. But if a pesticide manufacturer sets too great a price on his product, the farmer may decide that it is more economical to accept a lower yield or even to plough the crop in. A doctor does not have this option with regard to his patient. My colleague from Imperial Chemical Industries Limited, the late Frank Bradbury, was appointed Professor of Technological Economics at the University of Stirling in 1967. In cooperation with him and his staff I planned the Symposium in 1969 and it attracted a lot of interest. As a result Frank and his staff ran two short courses a year on technological economics of pesticides in which I participated as a lecturer and which were attended by many members of the Group over the period from 1970 to 1979. I think that it is a pity that the economics of pesticide production and use have received little attention from the Group since that time. The fact that the development and production of pesticides will be continued by the chemical industry only as long as it is profitable to do so tends to be overlooked by pesticide scientists who are interested only in the science and technology not in the economics.

During this decade only 39 evening meetings were held by the Group compared with 63 in the first decade. On the other hand 34 one-day meetings were held by the Group compared with 6 in the first decade. This illustrates the trend away from evening meetings towards whole day meetings. There has been speculation why evening meetings have gone out of fashion and it has been surmised that the attractions of home entertainment are now too great. But evening classes of all kinds all over the country are packed and, within the Society, the London Section regularly fills the lecture theatre for evening meetings. More likely the reason lies in the change already discussed in meetings of the Society from "popular" meetings which provided both entertainment and information to specialist, technically detailed papers. When a meeting is arranged on a specialist topic it is advantageous to provide several papers dealing with various aspects of that topic. Whatever the reason, it became clear that the demand of members was now for one day meetings. Possibly the reason why the Group did not favour one day meetings in the first decade was that the lecture room at Belgrave Square had poor visibility and acoustics and chairs so uncomfortable that it was torture to sit on them for more than an hour. One day meetings became an endurable experience at Belgrave Square only when the new lecture theatre was built in 1976, using the profits of the sale of 16 Belgrave Square. This was due to the drive of Horace Hayhurst, then Treasurer of the Society, and a founder member of the Pesticides Group, who had suffered hours of torment in the previous lecture room. It says a great deal for the dedication of Group members to their science that they endured so many one day meetings at Belgrave Square during this decade.

During this decade only 8 multi-day meetings were arranged compared with 6 in the first decade. Apart from the meetings already mentioned on physicochemical and biophysical factors affecting the activity of pesticides which led to the formation of the Panel, and the meeting on technological economics of pest control, the meetings were on veterinary

pesticides, on formulation, on sorption and transfer processes in soil jointly with the British Society of Soil Science, on plant growth regulators, on pesticide application by ULV methods which was arranged jointly with the Agricultural Aviation Group of the Royal Aeronautical Society, and on ways of increasing the biological contribution to the control of pests and diseases.

The latter meeting was a direct outcome of the assumption of the Secretaryship of the Group towards the end of this decade in 1970 by David Price Jones. All previous Secretaries had been chemists. David was an environmental biologist who was well known and had many friends in the field of conservation. He brought a distinctly biological flavour to our choice of meetings and brought the Group into close touch with leading conservationists and environmentalists at a time when attitudes in the media were becoming increasingly polarised. We found to our pleasure that we could talk to each other rationally and without acrimony and that we had a mutual recognition of many of the problems to be solved. I consider it a loss that David could retain the Secretaryship for only three years.

All in all this was a decade of growth and innovation.

This decade was a time of consolidation rather than innovation. The trend away from evening meetings continued and only 5 were held in this period, the last one in 1980. Thirty nine one day meetings were held by the Group and twenty five by the Panel. Seven multi-day meetings were organised by the Group and two by the Panel.

One of the multi day meetings was a four day meeting in September 1979 at York on " Insect neurobiology and pesticide action ". This attracted much interest from chemists, biochemists, biologists and insect physiologists as it was very pertinent to the aim of replacing random synthesis and screening by tailoring of compounds to interfere with specific insect biochemical processes. As a result a conference on this subject under the name of "Neurotox "has been held every three years since that time at various Universities and has proved an on-going success.

In September 1975, as part of the move into Europe started towards the end of the second decade, our first conference in Europe was arranged jointly by the Group and the Panel at Wageningen in Holland on " Evaluation of biological activity ". This was a very successful meeting but, unfortunately, interest in Europe waned thereafter and was not revived until 1989. The European member of the Committee, Professor van der Kerk, resigned in 1979 because he felt that insufficient attention was being given to Europe by the Committee, and he was not replaced until 1989.

An important innovation was the introduction in December, 1978 of a student seminar in which young pesticide scientists were invited to present papers on their work. A similar meeting was held in 1981 and has been repeated every two years since that time.

This decade saw the demise of the summer visits, the last one of which was made in 1978, and of the annual dinner, the last one of which was in 1981. They were both casualties of the disappearance of the social aspect which had been an important aspect of meetings of the Society in earlier times.

Possibly this third decade was less vigorous than the previous and subsequent decades because the Secretaries during this time served for only short periods. This is not to imply any lack of ability or dedication on their part but it does seem that continuity in the Secretary is beneficial especially as the Chairman serves only for two years. Our present Secretary Terry Grayson, has held office for the whole of the fourth decade and, as we shall see, this has been a very productive time for the Group.

During this decade the Panel justified the validity of the arguments for its separate existence by arranging one day meetings on a variety of topics which would probably not have been contemplated by the Group such as microcalorimetry, microscopy, biological interfaces, application of linear free energy relationships, photodegradation, computer graphics, etc.

No evening meetings were held in this period but there was a total of 58 one day meetings by the Group and Panel. In this decade the multi-day meeting really came into its own and 31 were organised by the Group and the Panel mostly in various Universities compared with 6 in the first decade, 8 in the second decade and 9 in the third decade. One of the reasons why a programme of this size and complexity became possible was that, in 1993, there were 22 members on the Pesticide Group Committee and 19 on the Panel Committee. In 1973 there were 14 members on the Group Committee and 11 members on the Panel Committee. In 1955 there were 11 members on the Group Committee and the Panel did not exist. For the first two decades the Committee proposed ideas for meetings but, in the main, it was the Secretary who did all the organisation. In the fourth decade organisation of each multi-day meeting was generally in the hands of a team of two or three members. This still left the Secretary with a great deal of co-ordination but it made such an extensive programme of multi-day meetings feasible. Another factor was the change in the function of the Society from a provider of meetings to its members either free or at a nominal charge to cover expenses into a more professional conference organiser aiming for full cost recovery and often attended by more non-members than members. It may be a useful topic for discussion whether this system discourages innovation by the Group and the holding of meetings on subjects which may not be in the mainstream of current interest but which might be important growing points for future research.

The multi-day meetings covered a wide variety of topics. Neurotox was firmly established as an on-going triennial meeting. A meeting in 1986 at Southampton on " Fundamental and practical approaches to combating resistance " appears similarly to have initiated an on-going series as it has been followed in 1991 by a meeting at Rothamsted on " Achievements and developments in combating pesticide resistance ", and further meetings on this important topic are planned. It is interesting to note that the first meeting of the Group on resistance was in January 1956 and that it was the first one-day meeting ever held by the Group. This is gratifying as an indication that the Committee at that time considered the future threat of resistance to be sufficiently great to justify a one-day meeting which, in those days, was a rarity in the Society. At the time it seemed appropriate to us to hold this meeting on resistance jointly with the Association of Applied Biologists and this might be a thought for future meetings.

The list of meetings held in this decade shows some interest in biological topics such as "Biotechnology and its application in agriculture " (1985), " Integrated pest and disease control " (1992), "Biological control " (1992), but it might be asked whether this interest fulfils the hopes expressed at the meeting at Oxford in 1972 on "Increasing the biological contribution in the control of pests and diseases ".

An interesting innovation was a meeting in 1985 held jointly with Oxfam on the use of pesticides in the Third World. This was the first time that the Group had addressed the social and political aspects of pesticide use. The experiment was not repeated possibly because it was felt that the Group members had not the expertise to make a useful contribution in these matters.

A series of meetings in which the main aspect was end use of pesticides was instituted on the management of pests and diseases of

series of tropical crops, tea in 1985, cotton in 1988, rice in 1990, and soya in 1992. The latter meeting had to be abandoned because of lack of support. The history of the past forty years suggests that the meetings of the Group which are best attended are those on the rational search for new pesticides, the modes of action of pesticides and the formulation and application of pesticides rather than those on end uses.

A very significant action by the Committee during this decade has been the resurgence of interest in Europe and of the earlier hopes of the Committee to establish the Group as the premier body for pesticide science in Europe as well as Britain which was an aim we had very much in mind when Bob Galley offered to host the 2nd International Congress of Crop Protection in Britain and persuaded the Society to act as sponsors. An abortive effort in this direction was made around 1970 when we undertook the study tours to Europe, appointed a European representative to the Committee and held a meeting at Wageningen, but the impetus died out. However, it was rekindled in 1989 when four European members were co-opted to the Committee - Jan Henfling from Holland, Dietrich Mangold, Richard Rees from Germany and Franz Schwinn from Switzerland. A member from France, Jaques Demonte, was added in 1992. It is to be hoped that this co-operation will be extended in the next decade to the emergent countries of Eastern Europe.

In 1983 I returned to the UK after five years in the USA during which time I had a "sabbatical" from the Group Committee. While I was in the USA I was a member of the Executive and Program Committees of the Agrochemicals Division of the American Chemical Society. I hoped that I might forge some closer cooperation between the Agrochemicals Division and the Pesticides Group but this proved to be a forlorn hope. The overseas interests of the Agrochemicals Division are almost entirely directed towards the Pacific Basin Rim where an effective cooperation exists between the agrochemical societies in the USA, Mexico, Canada, Australia and Japan which includes a biennial conference. I was totally unsuccessful in generating any interest in a similar Atlantic Basin Rim cooperation, possibly because we have no similar mid-ocean venue as attractive as Hawaii.

One interesting experiment we tried in 1985 was for the Agrochemicals Division to hold a one day meeting on "Flourine-containing pesticides" in the USA and then for the Pesticides Group to repeat the same meeting with the same speakers in Britain. The speakers seemed quite happy to do this but the experiment was never repeated. In the next decade, as we extend our interest and influence in Europe, some thought might be given to attempting once again to achieve some cooperation with the USA.

This fourth decade was a period of vigorous activity and innovation by the Group and the Panel and there is every reason to believe that this will continue in the fifth decade and that the next forty years will be even more productive than the first forty years have been. Not the least of this productivity were the 27 Monographs produced by the Group and published for them through the Society, and a list of these is appended. On the next page I record the Officers of the Group who, together with the ordinary members of the Committee and the members of the Group, made the first forty years so productive and created a firm foundation on which to build the future.

OFFICERS OF THE PESTICIDES GROUP 1954-1994

18.

Year	Chairman	Vice-Chairman	Secretary	Treasurer
1954-1955	R A E Galley	F P Coyne	G L Baldit	W H Read
1955-1956	R A E Galley	F P Coyne	G L Baldit	W H Read
1956-1957	F P Coyne	R A E Galley	G L Baldit	W H Read
1957-1958	F P Coyne	E E Turtle	G L Baldit	W H Read
1958-1959	E E Turtle	F P Coyne	K Wilson-Jones	J Allan
1959-1960	E E Turtle	G L Baldit	K Wilson-Jones	J Allan
1960-1961	G L Baldit	E E Turtle	B J Heywood	J Allan
1961-1962	G L Baldit	H Martin	B J Heywood	M Elliott
1962-1963	H Martin	G L Baldit	B J Heywood	M Elliott
1963-1964	H Martin	B J Heywood	J K Eaton	M Elliott
1964-1965	B J Heywood	H Martin	J K Eaton	M Elliott
1965-1966	B J Heywood	H Hayhurst	M B Green	M Elliott
1966-1967	H Hayhurst	B J Heywood	M B Green	M Elliott
1967-1968	H Hayhurst	J K Eaton	M B Green	M Elliott
1968-1969	J K Eaton	H Hayhurst	M B Green	M Elliott
1969-1970	J K Eaton	M B Green	D Price Jones	M Elliott
1970-1971	M B Green	J K Eaton	D Price Jones	M Elliott
1971-1972	M B Green	R A E Galley	D Price Jones	M Elliott
1972-1973	R A E Galley	M B Green	D T Saggars	M Elliott
1973-1974	R A E Galley	J M Winchester	D T Saggars	M Elliott
1974-1975	J M Winchester	R A E Galley	N R McFarlane	M Elliott
1975-1976	J M Winchester	D Woodcock	N R McFarlane	M Elliott
1976-1977	D Woodcock	J M Winchester	G B Pickering	M Elliott
1977-1978	D Woodcock	I J Graham-Bryce	G B Pickering	M Elliott
1978-1979	I J Graham-Bryce	D Woodcock	R R Ford	M Elliott
1979-1980	I J Graham-Bryce	C G L Furmidge	J C Lawrence	H J Cottrell
1980-1981	C G L Furmidge	I J Graham-Bryce	J C Lawrence	H J Cottrell
1981-1982	C G L Furmidge	H J Cottrell	M J Robson	R C Reay
1982-1983	H J Cottrell	C G L Furmidge	M J Robson	R C Reay
1983-1984	H J Cottrell	R J Hance	M J Robson	R C Reay
1984-1985	R J Hance	H J Cottrell	B T Grayson	R C Reay
1985-1986	R J Hance	J A Pickett	B T Grayson	R C Reay
1986-1987	J A Pickett	R J Hance	B T Grayson	R C Reay
1987-1988	J A Pickett	L G Copping	B T Grayson	R C Reay
1988-1989	L G Copping	J A Pickett	B T Grayson	R C Reay
1989-1990	L G Copping	R C Reay	B T Grayson	R Greenwood
1990-1991	R C Reay	L G Copping	B T Grayson	R Greenwood
1991-1992	R C Reay	B P S Khambay	B T Grayson	R Greenwood
1992-1993	B P S Khambay	R C Reay	B T Grayson	R Greenwood
1993-1994	B P S Khambay	P J Crowley	B T Grayson	R Greenwood

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|------|---|------------------|
| 1956 | Spraying techniques in crop protection | SCI Monograph 2 |
| 1957 | Residues of pesticides in foodstuffs
(joint with Association of British Insecticide
Manufacturers) | |
| 1960 | Proceedings of British Weed Control Conference
(joint with British Weed Control Council) | |
| 1961 | Fungicides in agriculture and horticulture | SCI Monograph 15 |
| 1965 | The formulation of pesticides | SCI Monograph 21 |
| 1967 | Physiochemical and biophysical factors affecting
the activity of pesticides | SCI Monograph 29 |
| 1968 | Plant growth regulators | SCI Monograph 31 |
| 1969 | Veterinary pesticides | SCI Monograph 33 |
| 1969 | Technological economics of pesticides | SCI Monograph 36 |
| 1970 | Sorption and transfer processes in soil | SCI Monograph 37 |
| 1977 | Crop protection agents - their biological
evaluation | |
| 1979 | Insect neurobiology and pesticide action | |
| 1985 | Biotechnology and its application to agriculture
(joint with British Crop Protection Council) | |
| 1985 | Neuropharmacology and pesticide action | |
| 1987 | Combating resistance to xenobiotics | |
| 1988 | Pest management in cotton | |
| 1988 | Molecular basis of drug and pesticide action | |
| 1989 | Prospects for amino acid biosynthesis inhibitors
in crop protection | |
| 1989 | Comparing laboratory and field pesticide
performance
(joint with Association of Applied Biologists) | |
| 1990 | Opportunities in biotransformations | |
| 1990 | Pest management in rice | |
| 1991 | Food quality and crop protection agents
(joint with British Crop Protection Council) | |
| 1991 | Molecular basis of drug and pesticide action | |
| 1991 | Achievements and developments in combating pesticide resistance | |
| 1992 | Pest management in soybean | |
| 1993 | Opportunities for molecular biology in crop production
(joint with British Crop Protection Council) | |
| 1994 | Comparing laboratory and field pesticide performance
(joint with British Crop Protection Council) | |

PESTICIDES GROUP EVENING MEETINGS

20.

18.10.54	The crop protection approval scheme 1	Royal Inst.	London
15.11.54	The statistical approach in crop protection research	Chem.Soc.	London
17.01.55	The crop protection approval scheme 2 (joint with Agriculture Group)	Chem.Soc.	London
21.02.55	Vacuum fumigation	Chem.Soc.	London
21.03.55	The crop protection approval scheme 3 (joint with Agriculture Group)	Chem.Soc.	London
18.04.55	The development of a new pesticide	Chem.Soc.	London
07.10.55	Some recent developments in controlling insects in stored products (joint with Glasgow Section)	Royal Tech. College	Glasgow
10.11.55	Disease resistance in plants (joint with Agriculture & Microbiol. Groups)	Geolog.Soc.	London
28.11.55	The control of parasitic weeds	Chem.Soc.	London
20.01.56	Control of insects (joint with Manchester Section)	Lit.&Phil. Soc.	Manchst
20.02.56	Recent advances in the use of insecticides in animal health	Chem.Soc.	London
19.03.56	Toxic chemicals in foodstuffs (joint with Agriculture Group)	Chem.Soc.	London
16.04.56	Pesticides in retrospect and prospect	Chem.Soc.	London
15.10.56	Grain storage problems	SCI	London
15.11.56	Recent research in organic phosphorous insecticides	SCI	London
21.01.57	Substituted urea weedkillers	SCI	London
18.02.57	Chemical control of the desert locust	SCI	London
18.03.57	Bilharzia and snail control	SCI	London
15.04.57	Comparative biochemical aspects of insecticidal action	SCI	London
15.10.57	Pesticide residues	SCI	London
18.11.57	Newer developments in pesticides	SCI	London
05.12.57	Pesticides - problems and prospects (joint with Aberdeen & North Scot. Section)	Marischal College	Aberdn
17.02.58	Corrosion of spraying and dusting machinery (joint with Corrosion Group)	SCI	London
21.04.58	Pesticides - past, present and future	SCI	London
20.10.58	Developments in control of timber insects and fungi	SCI	London
05.12.58	Gibberellic acid (joint with Agriculture & Fine Chem.Groups)	SCI	London
19.01.59	Resistance to insecticides	SCI	London
16.03.59	Problems in stomoxys research in East Africa	SCI	London
14.05.59	The chemical control of nematodes in soil	SCI	London
19.10.59	Official methods for analysis of pesticides	SCI	London
14.12.59	Insect control by gamma irradiation	SCI	London

			21.
18.01.60	The chemistry of a group of natural insecticides	SCI	London
15.02.60	Mode of action of dipyridyl quaternary salts as herbicides	SCI	London
21.03.60	Recent developments in chemical weed control	SCI	London
11.04.60	Trends in the control of infestations of stored products	SCI	London
26.09.60	Interpretation of mechanisms of insecticidal action	SCI	London
11.10.60	Sugar beet : cultivation and pest control measures (joint with Agriculture Group)	SCI	London
12.10.60	Biological assay of insecticidal residues (joint with SAC biological methods group)	Chem. Soc.	London
21.11.60	Systemic use of insecticides in animals	SCI	London
16.12.60	Film evening	SCI	London
16.01.61	Pesticides and the public	SCI	London
25.01.61	Wood treatment	Rentokil	Surrey
20.02.61	Experimental design in pesticide research	SCI	London
17.04.61	Economics and crop protection	SCI	London
18.12.61	Mothproofing of wool	SCI	London
15.01.62	Special techniques in residue analysis	SCI	London
19.02.62	Aspects of the use of emulsions in pesticide formulations (joint with Surface Activity Group)	SCI	London
19.03.62	Pesticides and wildlife	SCI	London
16.04.62	The chemist in crop protection	SCI	London
15.10.62	Determination of MCPA and related acids by gas liquid chromatography	SCI	London
19.11.62	The design and analysis of experiments (joint with Agriculture and Fine Chem. Groups)	SCI	London
14.01.63	Development of packages for pesticides	SCI	London
18.02.63	The work of the tropical pesticides research institute	SCI	London
18.03.63	The chemical and biological properties of venturicidin (joint with Microbiology and Fine Chem. Groups)	SCI	London
22.04.63	Chemical control of plant-parasitic nematodes in the United Kingdom	SCI	London
21.10.63	Vamidothion : a new systemic insecticide	SCI	London
25.10.63	Crop protection in cotton (joint with Manchester Section)	Lit & Phil Mnchstr	
18.11.63	Insect cross-resistance phenomena	SCI	London
16.12.63	Analysis of dithiocarbamates and thiuram disulphides used in agriculture	SCI	London
20.01.64	Field evaluation of insecticides	SCI	London
17.02.64	Interactions of hormonal substances in the growth and development of plants	SCI	London

16.03.64	Hormones and the control of insect growth	SCI		London
20.04.64	The role of chemistry in pest control	SCI		London
19.10.64	Studies on certain organo-sulphur compounds as fungicides	SCI		London
16.11.64	Electrons and the mode of action of certain herbicides	SCI		London
14.12.64	Vapona insecticide	SCI		London
18.01.65	Analysis of lindane and its formulations	SCI		London
15.02.65	Hatching agents for cyst-forming nematodes	SCI		London
12.04.65	Honeybee pheromones	SCI		London
23.04.65	Plant biogenesis (joint with Fine Chemicals Group)	SCI		London
01.10.65	The chemistry of bipyridyl weedkillers (joint with Manchester Section)	Lit & Phil	Mnchstr	
18.10.65	The public analyst's approach to pesticide residues	SCI		London
15.11.65	The assessment of possible health hazards associated with the use of pesticides	SCI		London
20.12.65	Recent developments in the control of commensal rodents	SCI		London
17.01.66	Some natural anti-fungal agents	SCI		London
21.02.66	Developments in the control of ectoparasites of livestock	SCI		London
21.03.66	New methods of identifying and measuring organo-phosphorus residues	SCI		London
18.04.66	Hydroxy-benzonitrile herbicides	SCI		London
17.10.66	New horizons in insect control	SCI		London
19.12.66	2-azido-4,6-bisalkylamino-1,3,5-triazines : a new group of herbicides	SCI		London
16.01.67	The use of insect pathogens for the control of pest species	SCI		London
20.03.67	Synergism and potentiation in insecticides	SCI		London
03.10.67	The nature of the settlement substance	SCI	P	London
07.11.67	The concept of free space in plant physiology	SCI	P	London
05.12.67	Dew and rain	SCI	P	London
19.02.68	Spray application efficiency in fruit crops	SCI		London
18.03.68	A review of Governmental pesticide control in various countries	SCI		London
01.10.68	Navigational aspects of responses to insect attractants	SCI	P	London
10.03.69	Troublesome aspects of the formulation of solid pesticides	SCI		London
02.10.69	Problems of identifying small residues of pesticides	SCI		London
04.11.69	Some alternatives to insecticides	SCI		London
02.12.69	Transport in xylem	SCI		London

02.02.71	Partition (joint with Solvent Extraction Group)	SCI	P	London
10.09.71	Mosquitoes and their control	SCI		London
20.10.71	Plant viruses and their control	SCI		London
14.11.71	The effect of herbicides on soil fauna and microflora	SCI		London
18.01.72	Organophosphate enzyme inhibitors	SCI		London
12.02.72	Natural breakdown of chemicals (joint with Microbiology Group)	SCI		London
03.04.73	Time-dose response phenomena in biology	SCI	P	London
14.01.74	Measurement and interpretation of low volatilities and solubilities	SCI	P	London
18.02.74	Product registration	SCI		London
08.04.74	Some aspects of surface chemistry of significance to life in the sea (joint with Colloid & Surface Chem. Group)	SCI	P	London
13.01.75	Some colloid chemical aspects of pressurised pack aerosols (joint with Colloid & Surface Chem. Group and Pharmaceutical Soc. and Soc. Cosmt. Chem.)	SCI	P	London
07.02.78	Time as a variable in pesticide action	SCI	P	London
17.10.78	Colloid and surface science and technology (joint with Colloid & Surface Chem. Group) in the pesticides industry	SCI		London
24.11.78	Progress in design of insecticides	SCI		London
05.12.80	Forecasting trends in pesticide usage	SCI		London

PESTICIDES GROUP AND PANEL ONE-DAY MEETINGS

24.

09.01.56	Resistance of insects to insecticides (joint with Asscn. of Applied Biologists)	6 papers	
16.11.59	Pyrethrum	6 papers	
11.10.60	Problems of the sugar beet crop (joint with Agriculture Group)	4 papers	
30.06.61	Industrial weed control (joint with British Weed Control Council)	8 papers	
18.09.61	Modern aspects of industrial weed control	4 papers	
15.01.62	Special techniques in residue analysis	4 papers	
25.10.66	The persistence of herbicides (joint with Agriculture & Microbiology Groups)	9 papers	
15.02.67	Problems of aerial spraying (joint with Royal Aeronautical Society)	8 papers	
03.11.67	Food production in the year AD2000 (joint with Agriculture & Food Groups and Manchester Section)	6 papers	
06.02.68	The effect of rain on plants, pests and pesticides	6 papers	P
02.04.68	The physicochemical aspects of penetration through plant cuticle	7 papers	P
23.04.68	Pesticidal carbamates	8 papers	
27.09.68	Chemically induced resistance of plants to pests to pests and diseases	16 papers	
16.12.68	New herbicides	5 papers	
20.01.69	Control of insects in stores of home-grown grain	5 papers	
19.02.69	Diffusion from soil into plant	4 papers	
26.02.69	Recent trends in agricultural aviation (joint with Royal Aeronautical Society)	8 papers	
15.01.71	Aspects of soil fumigation (joint with Association of Applied Biologists)	12 papers	
15.02.71	The search for more effective rodenticides (joint with British Pest Control Association)	7 papers	
15.03.71	Physicochemical aspects of herbicide selectivity (joint with Physicochem. and Biophys. Panel)	6 papers	
18.10.71	Phloem transport	6 papers	P
07.12.71	Photochemical modification of biologically active molecules (joint with British Photobiology Society)	6 papers	P
03.03.72	Granular pesticides (joint with Association of Applied Biologists)	8 papers	P
06.04.72	Ion transport in membranes	7 papers	P
03.10.72	The rhizosphere	6 papers	P

16.10.72	Resistance to chemicals by arthropods	8 papers	
01.11.72	Multi-residue detection (joint with Soc. Analytical Chem.)	7 papers	
20.11.72	Post-harvest deterioration (joint with Biodeterioration Soc.)	8 papers	
05.12.72	Surface phenomena	4 papers	P
15.01.73	The leaf microflora and its influence on disease control	8 papers	
30.01.73	Biological interfaces	7 papers	P
21.02.73	Pesticide use, application and allied problems in forest management (joint with Royal Aeronautical Soc.)	8 papers	
06.03.73	Factors affecting distribution of pesticides throughout the atmosphere (joint with Physiochem. and Biophys. Panel)	5 papers	
19.03.73	Pesticides and the processed food industries (joint with Food Group)	8 papers	
16.04.73	Chemistry and biology of some new pesticides	8 papers	
15.10.73	The computer as an aid to pesticide research (joint with Physiochem. and Biophys. Panel)	6 papers	
06.11.73	Some indirect effects of pesticides on crop growth and yield	7 papers	
23.11.73	Chemical knockdown studies in biology	5 papers	P
07.03.74	Wild oat control : current progress (joint with Asscn. of Applied Biology)	4 papers	
18.03.74	Microcalorimetry in biology	5 papers	P
21.10.74	Chemical and mechanical energy utilisation in agriculture (joint with Agriculture Group)	5 papers	
02.11.74	Surfactants and biological activity (joint with Pharmaceutics Society)	6 papers	P
05.11.74	Surfactants and biological activity (joint with Colloid and Surface Chemistry Group)	8 papers	P
03.12.74	Aphid, scale, mealy bug and whitefly control (joint with Asscn. of Applied Biologists)	8 papers	
20.01.75	Residue determination of benzimidazoles (joint with Soc. of Analytical Chemists)	3 papers	
04.02.75	Entry and distribution of pollutants into groundwater and rivers	3 papers	P
14.02.75	The complementary roles of Government, Academic and Industrial research in pest and disease control	8 papers	
04.03.75	Aspects of fungicidal selectivity	4 papers	P
17.03.75	Pesticide progress 1975	4 papers	
07.10.75	Drops and particles in air	6 papers	P
20.10.75	Safe use of pesticides	8 papers	
04.11.75	Application of linear free energy relationships in biological systems	6 papers	P

10.11.75	Control of problem weeds	8 papers	
08.12.75	Control of disease vectors	8 papers	
05.10.76	Neurophysiological action of pesticides	8 papers	P
22.10.76	Human and animal endoparasites (joint with Fine Chemicals Group)	7 papers	
02.11.76	Experiment design in the evaluation of biologically active chemicals	7 papers	P
19.11.76	Newer applications of pyrethroids	12 papers	
01.02.77	Biological effects of airborne particles as pollutants and pesticides	5 papers	P
21.02.77	Pesticide progress 1977	7 papers	
01.03.77	Physical mechanisms in plant growth regulators	6 papers	P
11.05.77	Food infestation by insects and rodents (joint with Food Group)	6 papers	
19.09.77	Science and practice of pesticide packaging (joint with Physiochem. and Biophys. Panel)	7 papers	
01.11.77	Controlled release of pesticides	8 papers	P
25.11.77	Regulation of arthropod growth and development (joint with Zoological Society)	8 papers	
20.02.78	Non-vector control of virus and bacterial diseases of plants	7 papers	
07.03.78	Molecular approaches to drug, pesticide and flavour design (joint with Fine Chemicals Group)	4 papers	P
20.03.78	Pesticides : the users' viewpoint (joint with Agriculture Group)	6 papers	
13.04.78	Diffusion and transport processes related to biological and environmental systems	5 papers	P
17.04.78	Pest control for major tropical crops	11 papers	
03.10.78	Photodegradation of pesticides	6 papers	P
07.11.78	Microscopy and its use in pesticide research (joint with Royal Microscopical Soc.)	6 papers	P
12.12.78	Student seminar : current pesticide research	8 papers	
25.01.79	Uptake and translocation of herbicides by plants (joint with Asscn. of Applied Biologists)	8 papers	
16.02.79	Implications of recent advances in pesticide application techniques (joint with Asscn. of Applied Biologists)	8 papers	
19.03.79	Pesticide Progress 1979	6 papers	
23.04.79	The changing industry in a changing environment - technological and economic aspects	6 papers	
02.10.79	Properties of concentrated suspensions of solids in liquids (joint ewith Colloid and Surface Chemistry Group	6 papers	P
29.10.79	Recent developments in the use of plant growth retardants (joint with Brit. Plant Growth Regulator Group	5 papers	
04.12.79	Molecular conformation and the design of biologically active molecules	6 papers	P

05.02.80	Chemical control of grassland pests and diseases (joint with Grassland Res. Inst.)	8 papers	
17.03.80	Medical and veterinary use of pesticides to control arthropods	6 papers	
04.03.80	Impact of new analytical techniques on pesticide development	6 papers	P
14.04.80	Acquisition of resistance (joint with Physiochem. and Biophys. Panel)	6 papers	
29.09.80	Chemical analysis and pesticide development (joint with Physiochem. and Biophys. Panel)	8 papers	
27.10.80	Enzyme mechanisms and design of enzyme inhibitors (joint with Fine Chemicals Group)	6 papers	P
03.02.81	Joint action of mixtures of drugs and of pesticides	6 papers	P
25.03.81	Herbicide selectivity	8 papers	
30.04.81	Absorption and translocation of pesticides by plants	7 papers	P
15.06.81	Student seminar : mode of action of pesticides (joint with Physiochem. and Biophys. Panel)	8 papers	
06.10.81	Biophysical methods of relevance to drug and pesticide research	7 papers	P
16.02.82	Insecticidal deposits : their pick up and biological activity (joint with Asscn. Applied Biologists)	5 papers	P
02.03.82	Non-mammalian metabolism of pesticides	6 papers	
06.04.82	Information science, computers and pesticide research	5 papers	
25.05.82	Spray impaction, retention and adhesion (joint with Colloid Group)	8 papers	
02.11.82	Redox processes in drug and pesticide action	6 papers	
22.02.83	Crop protection in China	8 papers	
08.03.83	Student seminar	8 papers	
10.05.83	Environmental safety of pesticides - the role of field testing	6 papers	
29.11.83	Recent developments in controlled release formulations for pest control	5 papers	
28.02.84	Molecular graphics and computational chemistry for the drug and pesticide chemist	8 papers	P
13.03.84	Aromatic ether herbicides	5 papers	
15.05.84	Plant growth regulators	6 papers	P
05.07.84	Chemical inputs and agricultural productivity (joint with Agriculture Group)	6 papers	
26.10.84	Use of pesticides to control post-harvest food losses in food crops (joint with Food Group)	7 papers	
26.11.84	Control of ectoparasites of veterinary importance	8 papers	
11.12.84	Biologically active secondary metabolites	7 papers	

12.02.85	Student seminar : movement of pesticides in higher plants	8 papers	
26.02.85	Structure activity relationships in pesticide research	6 papers	
29.03.85	Biochemical basis of pesticide selectivity	6 papers	P
21.10.85	Fluorine-containing pesticides (joint with American Chemical Society)	9 papers	
15.11.85	Crop protection in Japan	6 papers	
10.12.85	Biologically active compounds from higher plants	8 papers	P
11.02.86	Computer graphics in pesticide design (joint with computer graphics Society)	8 papers	P
13.03.86	Modern trace analysis techniques for pesticides	7 papers	
08.04.86	Chirality in chemical crop protection	6 papers	
24.09.86	Acylurea herbicides	7 papers	
14.10.86	Enhancing pesticide action through mixtures (joint with Physiochem. and Biophys. Panel)	8 papers	
21.11.86	Pesticides in Australia	7 papers	
10.02.87	Fate of pesticides in soil and groundwater (joint with Water and Environment Group)	7 papers	
05.03.87	Gibberellin and sterol biosynthesis inhibitors	8 papers	
31.03.87	Student seminar : membrane action and pesticides	10 papers	
22.09.87	Mechanisms of disease resistance	7 papers	
03.11.87	Formulation of pesticides and pharmaceuticals : colloidal aspects	8 papers	
13.11.87	Crop protection in Brazil	6 papers	
08.12.87	Neuropeptides	8 papers	
23.02.88	Computer graphics in pesticide design	6 papers	
08.03.88	Impact of genetic manipulation on pest management	8 papers	
08.04.88	The role of biochemistry in pesticide discovery	9 papers	
12.05.88	Chemicals in homes and gardens (joint with London Section)	8 papers	
27.09.88	Immunoassays in crop protection	8 papers	
18.10.88	Structure activity relationships in pesticide research	7 papers	
01.11.88	Mechanism and regulation of transport processes	8 papers	
18.11.88	Pesticides in Northern Europe	7 papers	
06.12.88	Advances in insect vector control	7 papers	
21.03.89	Student seminar : Ligand/receptor interactions and pesticide development	8 papers	
06.06.89	Regulatory pressures in industrial biotechnology	8 papers	
20.06.89	Isoteric replacement in drug and pesticide chemistry	6 papers	
26.09.89	Modelling in drug and pesticide processes : xenobiotic movement in mammals, insects and plants	8 papers	
10.10.89	Remote and non-intrusive sensing in crop protection	7 papers	

31.10.89	Formulation of pesticides and pharmaceuticals : developments in pesticide formulation	7 papers
17.11.89	Crop protection in Eastern Europe	6 papers
27.03.90	Pesticide movement through soil	7 papers
06.11.90	Interference with structure and function of membranes	8 papers
04.12.90	Physiochemical properties as affecting the penetration of xenobiotics to the target site	7 papers
12.02.91	Molecular similarity and recognition	4 papers
26.03.91	Student seminar : post graduate research in pesticides	8 papers
08.10.91	Food quality and crop protection agents	10 papers
04.11.91	In vitro systems for testing activity, toxicity and metabolism	8 papers
21.01.92	Post harvest strategies (joint with Agriculture Group and Asscn. Applied Biologists)	8 papers
11.02.92	Influence of membranes on drug and pesticide action	8 papers
03.03.92	Artificial intelligence methods in drug and pesticide research	8 papers
24.03.92	Student seminar : post graduate research in pharmacology	8 papers
20.11.92	Crop protection in India	7 papers
16.12.92	Pesticide and drug metabolism	5 papers
09.02.93	Interactions between pesticides in mixtures	7 papers
10.03.93	Novel chemistry in agrochemical research (joint with Fine Chemicals Group)	8 papers
24.03.93	Student seminar : post graduate research	8 papers
12.05.93	Perspectives in carbohydrate and inositol chemistry : application to pesticide and pharmaceutical research	8 papers
14.10.93	Non-labelled techniques : new directions in drug and pesticide research	7 papers
07.12.93	Common themes in pesticide and pharmaceutical research	8 papers
25.01.94	Control of Bemisia	9 papers
15.03.94	Integrated crop protection (joint with Agriculture & Environment Group)	9 papers
22.03.94	Fatty acid biosynthesis	9 papers

PESTICIDES GROUP AND PANEL MULTI-DAY MEETINGS

30.

31.10-03.11.55	National crop protection : the use of insecticides and fungicides in agriculture and horticulture	Eastbourne	26 papers
11/12.12.56	Comparison of high and low volume spraying techniques on fruit and ground crops	London	12 papers
20/21.10.57	Residues of pesticides in foodstuffs (joint with Assn. Brit. Insecticide Mfrs.)	London	10 papers
20/21.01.58	Pests of stored products	London	14 papers
20/21/22.11.58	British weed control conference (joint with British Weed Control Council)	Brighton	26 papers
20/21.03.61	Fungicides in agriculture and horticulture	London	20 papers
30/31.03.65	The formulation of pesticides	London	20 papers
10/11/12.04.67	Physicochemical and biophysical factors affecting the activity of pesticides	London	24 papers
08/09.01.68	Plant growth regulators	London	16 papers
31/01/02.04.69	Veterinary pesticides	London	23 papers
03/04/05.09.69	Technological economics of pesticides	Stirling	26 papers
07/08.04.70	Sorption and transfer processes in soil (joint with British Society of Soil Sci.)	London	13 papers
05/07.03.72	Increasing the biological contribution in the control of pests and diseases	Oxford	20 papers
04/05.04.74	Pesticide application by ULV methods (joint with BCPC and Royal Aero. Soc.)	Cranfield	14 papers
16/17/18.09.74	Theory and practice of emulsion technology (joint with Colloid & Surface Chem. Group)	London	24 papers
16/17/18.04.75	Evaluation of biological activity (joint with Physicochem. & Biophys. Panel)	Wageningen	24 papers
15/16/17.09.76	Herbicides and fungicides - factors affecting their activity (joint with Fine Chemicals Group)	Bangor, Wales	24 papers
03-07.09.79	Insect neurobiology and pesticide action	York	30 papers
01/02.12.81	Novel approaches in agrochemical research (joint with Physicochem. & Biophys. Panel)	London	12 papers
06/07.01.83	The use of pesticides in industry (joint with Manchester Section)	Manchester	8 papers
22/23/24.03.83	Ergosterol biosynthesis inhibitors	Reading	14 papers
13/14/15.12.83	Influence of environmental factors on herbicide performance (joint with Assn. Applied Biologists)	Oxford	18 papers
11/12/13.04.84	Pyrethroid insecticides in the environment	Southampton	20 papers
25/26/27.09.84	Recent advances in the chemistry of insect control (joint with Royal Soc. Chemistry)	Cambridge	18 papers
01-04.04.85	Neuropharmacology and insecticide action	Bath	30 papers
30/31.05.85	The use of pesticides in the third world (joint with Oxfam)	London	12 papers
24/25.06.85	Tea - aspects of pesticide usage	London	10 papers
01/02/03.07.85	Physicochemical properties and their role in environmental hazard assessment (joint with Royal Soc. Chemistry)	Canterbury	20 papers

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| 04/05/06.09.85 | Biotechnology and its application
in agriculture
(joint with Biotechnology Group) | Cambridge
P 20 papers |
| 15/16/17.07.86 | Fundamental and practical approaches
to combating resistance
(joint with Physicochem. & Biophys. Panel) | Southampton
20 papers |
| 02/03.12.86 | Novel approaches in agrochemical research | London 12 papers |
| 06-09.04.87 | Pesticide transfer and performance
(joint with Asscn. Applied Biologists) | Bath 30 papers |
| 23/24.06.87 | Combating resistance to xenobiotics | London 16 papers |
| 26/27/28.08.87 | Multivariate workshop | Sussex |
| 11-15/04/88 | Neurotox '88 | Nottingham
26 papers |
| 07/08.06.88 | Pest management in cotton | London 24 papers |
| 02/03/04.10.88 | Multivariate workshop | Portsmouth |
| 04/05/06.04.89 | Comparing laboratory and field pesticide
performance
(joint with Asscn. of Applied Biologists) | |
| 05/06/07.09.89 | Prospects for amino acid biosynthesis
inhibitors in crop protection | Cambridge
28 papers |
| 18/19/20.09.89 | Progress and prospects in insect control
(joint with Brit.Crop Protection Council) | London 28 papers |
| 03/04/05.04.90 | Opportunities in biotransformations | Cambridge
24 papers |
| 05/06/07.06.90 | Pest management in rice | London 26 papers |
| 02/03/04.07.90 | Recent advances in the chemistry of
herbicides and fungicides | Cambridge
26 papers |
| 07-11/04.91 | Neurotox '91 | Southampton |
| 14-17/07.91 | Achievements and developments in
combating pesticide resistance | Rothamsted
26 papers |
| 02/03/04.09.91 | Toward the rational design of pesticides | Surrey 30 papers |
| 03/04/12.91 | Novel approaches in agrochemical research | London 16 papers |
| 19/20.05.92 | Integrated pest and disease control
in protected crops | Lisse, Holland
14 papers |
| 03-07.08.92 | Adjuvants for agrochemicals | Bristol
30 papers |
| 19/20.10.92 | Biological control : use of living
organisms in the management of
invertebrate pests, pathogens and weeds | London 20 papers |
| 01/02.12.92 | Natural products a a source for new
agricultural chemicals | London 16 papers |
| 19/20/21.07.93 | Recent advances in the chemistry of
insecticides
(joint with Royal Soc.Chemistry) | Cambridge
20 papers |
| 27/28/29.09.93 | Opportunities for molecular biology
in crop production
(joint with Brit. Crop Protection Cncl.) | Cambridge
22 papers |
| 12/13/14.04.94 | Comparing glasshouse and field performance
(joint with Brit. Crop Protection Cncl.) | Kent 22 papers |

SUMMARY OF PESTICIDES GROUP AND PANEL ACTIVITIES
1954 to 1994

32.

NOTEWORTHY EVENTS

- 1956 National Crop Protection Conference, Eastbourne
 1958 British Weed Control Conference, Brighton
 These two meetings were the foundation of the annual " Brighton " conference, now organised by the British Crop Protection Council, which has established an international stature.
 1956 First one-day meeting of the Group on " Resistance of insects to insecticides "
 This meeting was the start of a continuing interest by the Group in resistance which culminated in the conferences in 1986 at Southampton and at Rothamsted in 1991 on combating resistance which will be the start of an on-going series of conferences, possibly at four year intervals on this subject.
 1967 Formation of the Physicochemical and Biophysical Panel.
 The Panel has gone from strength to strength over the years and has fully justified Spencer Hartley's original inspiration.
 1969 Founding of Pesticide Science
 This journal has established itself as the leading publication on pesticide science with a world-wide reputation for high quality
 1979 The first conference on insect neurobiology and pesticide action at York.
 This conference was the start of the ongoing series of Neurotox conferences which are now held triennially and have achieved an international reputation.

MEETINGS

Total number of meetings held	323
Total number of papers presented	2272
Total number of monographs	27
Total number of visits to research establishments	21
Total number of study tours to Europe	2

	1954-1964	1964-1974	1974-1984	1984-1994
Evening meetings	63	39	5	0
One day meetings	6	34	64	56
Multi-day meetings	6	8	9	31

SOCIETY GROUPS with which the Group or Panel have had a joint meeting :
 Agriculture, Biotechnology, Colloid and Surface Chemistry, Corrosion, Fine Chemicals, Food, Microbiology, Water & Environment

OTHER BODIES with which the Group or Panel have had a joint meeting :
 American Chemical Society, Association of Applied Biologists, Association of Brit. Insecticide Manufacturers, Biodegradation Society, Brit. Crop Protection Council, Brit. Pest Control Association, Brit. Photobiology Society, Brit. Plant Growth Regulator Group, Brit. Society of Soil Science, Brit. Weed Control Council, Computer Graphics Society, Grassland Research Institute, Oxfam, Pharmaceutical Society, Royal Aeronautical Society, Royal Microscopical Society, Royal Society of Chemistry, Society of Analytical Chemistry, Zoological Society