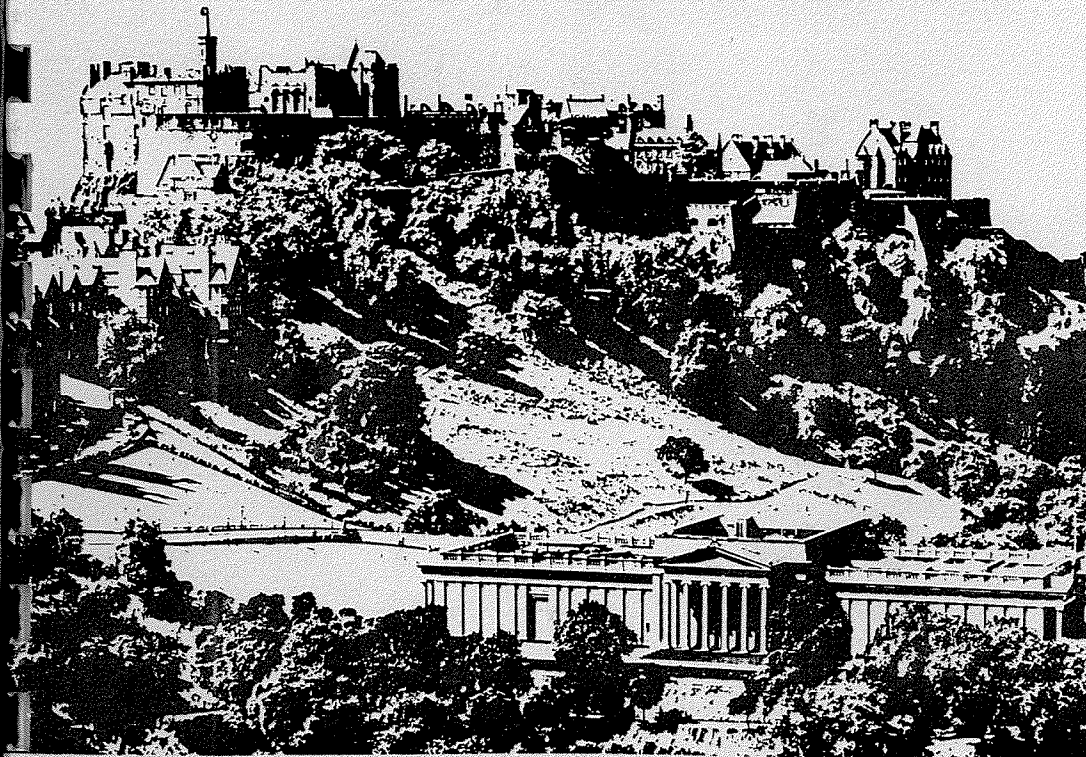


Carl Zey

PROGRAMME



**Second International Conference
on
ENVIRONMENTAL MUTAGENS**

Edinburgh, July 11—15, 1977

Patron: HRH The Duke of Edinburgh, KG, KT

*Sponsored by the International Association
of Environmental Mutagen Societies
and the European Environmental Mutagen Society*

Please Note: The Conference programme has been sent to registrants in advance. You must bring it with you. A limited number of extra copies will be available but we must charge a fee of £1.00 for each copy.

Cover picture: Edinburgh Castle and Art Galleries

**SECOND INTERNATIONAL CONFERENCE
on
ENVIRONMENTAL MUTAGENS**

PROGRAMME

EDINBURGH, JULY 11-15, 1977

Hon. President: Charlotte Auerbach

Hon. Vice-Presidents:

A. Hollaender, I. A. Rapoport, Y. Tazima, K. Sundaram

**Sponsored by the International Association of
Environmental Mutagen Societies
and the
European Environmental Mutagen Society**

INTERNATIONAL ASSOCIATION OF ENVIRONMENTAL MUTAGEN SOCIETIES

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Vice-President: F. H. Sobels

Secretary: R. C. von Borstel

Treasurer: S. Kondo

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P. Oftedal, T. Sugimura, K. Sundaram, Y. Tazima

EUROPEAN ENVIRONMENTAL MUTAGEN SOCIETY

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Vice-President: H. Böhme

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Treasurer: P. H. M. Lohman

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G. Eneroth, J. Grauwiler, M. Hofnung, S. Igali, A. Kappas, J. F. Koeman,
A. Léonard, M. Marquardt, E. Moustacchi, J. Moutschen, P. Oftedal, J. Parry,
E. Poulson, A. Putrament, G. Röhrborn, A. Ronen, N. Savkovic, J. Schöneich,
F. H. Sobels, M. Sorsa, A. Šram, F. Würigler, G. Zetterberg

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Secretary General: P. Brookes
Treasurer: B. J. Dean

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B. A. Bridges, B. J. Dean

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F. J. de Serres, H. J. Evans, A. Hollaender, S. Kondo, N. K. Notani, P. Oftedal,
G. Rohrborn

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A. Brown, K. Buckton, A. C. Chandley, M. Luker, D. MacDonald,
P. McAthey, D. McGregor, P. Perry, W. Ratnayake

FINANCIAL SPONSORS

The Officers of the Second International Conference on Environmental Mutagens wish to acknowledge the generous assistance provided by the following commercial organizations:

Shell International Petroleum Co.	Nestlé
Inveresk International	Hoffmann La-Roche
Imperial Chemical Industries	British Petroleum
Boots	Glaxo
Sandoz	Ciba-Geigy
Hoeschst (UK) Ltd.	Life Sciences Research
Riker Laboratories	Chemiewerk Homburg
Elsevier-North Holland	Murphy Chemical Co.

TRAVEL PROGRAMME

The chief sponsor for the travel programme has been the *United Nations Environmental Programme* whose funds were used exclusively to bring participants from developing countries.

The *Wellcome Foundation* and the *Cancer Research Campaign* generously provided bursaries for students and workers from developing countries.

Further travel support for invited participants and a limited number of other participants was provided by the general sponsors listed above.

CONFERENCE PUBLICATIONS

The publications of the Conference have been solely sponsored by the Umweltbundesamt of the Federal German Republic.

ORGANIZATIONAL ASSISTANCE

The organizational and secretarial help of the Department of Genetics (University of Edinburgh), the Paterson Laboratories (Manchester), Shell Research (Sittingbourne), the Chester Beatty Research Institute (Pollards Wood) and the MRC Cell Mutation Unit (University of Sussex) has been invaluable and is gratefully acknowledged by the Officers.

GENERAL INFORMATION

A. REGISTRATION

1. PLACES AND TIMES (see map on back cover)

On Saturday and Sunday, July 9th and 10th, registration facilities will be available from 09.00 hrs to 21.00 hrs at the Pollock Halls, Dalkeith Road, Edinburgh. Those travelling by air or by rail will be taken there by a minibus service operating from the centre of Edinburgh on these days (see below, Section B.1). Those arriving independently will find adequate directions to the Registration Centre when they reach the Pollock Halls.

On Monday these facilities will be moved to the Appleton Tower Concourse Area and will be available each day from 09.00 hrs to 18.00 hrs except Friday, when the desks will only remain open until 14.00 hrs.

2. FACILITIES AVAILABLE AT THE REGISTRATION CENTRES

(a) Brief case distribution to *registered* participants. These will contain abstracts of the presented papers, address lists, your badge and other items which will help you during the conference. New programmes will not be reissued and *you should bring this one with you*. However, a very limited number will be available to replace losses but these will cost £1.00 each.

(b) Room numbers and keys will be distributed to Pollock Halls guests.

(c) An information desk will be available for local and conference information.

(d) An editorial desk will be available to assist speakers and poster contributors, to collect revised abstracts and to collect manuscripts from those who have been asked to provide them for publication.

(e) No banking facilities will be available on July 9th and 10th and we urge you therefore to exchange sufficient currency for your needs during the weekend at your port of entry to the UK. Normal banking facilities will be available on Monday, July 11th and currency will be exchanged and cheques cashed by the branch of the Bank of Scotland situated in the Students' Centre close to the Appleton Tower (see map). Banking hours in Scotland are as follows: Monday to Thursday 09.30-12.30 hrs and 13.30-15.30 hrs. On Thursday banks also open from 16.30 until 18.00 hrs. On Fridays banks stay open all day from 09.30 to 15.30 hrs.

3. BADGES

Your conference badge is important, not only to identify you for others at the conference, but also to indicate whether you are a registered delegate (white badges) as distinct from conference staff (red badges) or members of the press (blue badges). For security reasons, no one will be admitted to the conference sessions or buildings unless they wear their badge – please do not forget it. The conference sessions will be held in the George Square Theatre and the Appleton Tower.

GENERAL INFORMATION

B. TRANSPORT

1. TO THE CONFERENCE

Delegates arriving at Edinburgh Airport (Turnhouse) should take the Airport Bus Service to the Town Terminal next to Waverley Station, Princes Street. Some North American visitors may enter Scotland through Prestwick International Airport. These will probably be taken to Edinburgh by bus (approximately 2½ hrs) and will arrive at St. Andrew Square. They should make their way to the Air Terminal at Waverley Station, a walk of about five minutes (see map). A free minibus service will operate continuously between the Air Terminal at Waverley and the Pollock Halls on Saturday and Sunday from 09.00-21.00 hrs. The buses will be marked 'EMS'. Passengers travelling Air Canada or British Airways are entitled to book seats on the Air Shuttle to Edinburgh from Prestwick. This leaves at 07.25 hrs each day and the flight to Turnhouse takes 20 minutes.

Those arriving by train will come to Waverley Station also, and they should leave the station by the ramp to the right of the main book-stall. At the top of the ramp a right turn will bring them to the Air Terminal building and the minibus service.

If you arrive at any other time taxis are available both inside and just outside Waverley Station. Please note that the Registration facilities move to the Appleton Tower, George Square after Sunday, July 10th. If you are arriving after this, come to the Appleton Tower to register and *not* to the Pollock Halls.

For those travelling by road Pollock Halls is next to the Dalkeith Road (A68). Automobile Association signs will be posted to assist motorists.

2. DURING THE CONFERENCE

Shuttle buses will operate in the mornings from Monday onwards to take delegates from Pollock Halls to the Conference Sessions in the Appleton Tower and George Square Theatre. In the evening a reverse service will be operated. The times are shown below. This service is free, but only badge wearers will be permitted to ride on the buses. Buses will also transfer delegates to and from the social events and Pollock Halls where necessary.

	Depart Pollock Halls	Depart Appleton Tower
Monday	08.30-09.30	17.30-18.00
Tuesday	08.15-09.00	18.00-18.30
Wednesday	08.15-09.00	
Thursday	08.15-09.00	18.00-18.30
Friday	08.15-09.00	to be arranged

3. B.A. REPRESENTATIVE

A British Airways representative will be available in Room 7 of the Appleton Tower from 12.30 until 14.00 hrs each day except Wednesday, to assist delegates with home-ward travel arrangements. It is essential that you contact him as early in the week as possible.

GENERAL INFORMATION

4. EASTERN SCOTTISH/SCOTTISH OMNIBUSES

We expect Eastern Scottish to provide a desk in the Appleton Tower Concourse Area to advise guests accompanying delegates on the availability of bus tours in Edinburgh and its environs during the Conference. These are public tours and are quite distinct from the Official Conference Tours for which bookings should already have been received.

C. MEALS

1. LUNCH can be purchased at the Student Centre Refectory from Monday to Friday. There is also a lounge and a bar serving light refreshments which we shall be able to use. Pollock Halls residents requiring lunch during the weekend before the conference will be able to use the Pollock Halls Refectory.

2. EVENING MEALS. Where necessary evening meals can be purchased at the Pollock Halls by residents. A list of recommended restaurants in the city will also be given to all delegates on arrival. Please note that adequate provision for an evening meal will be made as part of the social programme on Sunday, 10th and Thursday, July 14th and for participants in the more extended tours arranged for Wednesday, July 13th.

3. COFFEE. Coffee, tea and soft drinks will be provided at the Conference Centre in the mornings and afternoons. We hope you will take an opportunity to meet friends and visit the book exhibition in the concourse area.

D. SOCIAL PROGRAMME (see Summary Timetable on inside back cover.)

The official Social Programme is as follows:

Sunday, July 10th	20.00 hrs in Holland House, Pollock Halls, a Welcome Reception sponsored in part by the University of Edinburgh.
Monday, July 11th	20.30 hrs at the Assembly Rooms, George Street - A Civic Reception, provided by the City of Edinburgh. Light refreshments will be provided.
Wednesday, July 13th	from 13.30 onwards, Official Excursions.
Thursday, July 14th	20.00 hrs at the Assembly Rooms, the Conference Dinner and Scottish Evening.

Except for the first social event delegates will be admitted only by ticket. You will find these in your brief cases. Social events will be free to full and accompanying members who are registered.

E. ADDITIONAL FACILITIES

1. COPYING FACILITIES will be available for conference delegates from Monday morning onwards at the Information Desk in the Appleton Tower Concourse. The cost for this service will be given by the operator.

2. MESSAGE BOARDS and mail distribution will be situated in the Concourse of the Appleton Tower. The official address *during the Conference* will be c/o 2nd International Conference on Environmental Mutagens, Appleton Tower, George Square, Edinburgh, Scotland. The nearest Post Office is situated in Forrest Road (see map).

GENERAL INFORMATION

3. A SUPERMARKET selling food, stationery, newspapers, etc. is situated in the Students' Centre (see map).
4. TELEPHONES installed for the use of Conference staff cannot be used for private calls. There are, however, a number of public 'phone booths in the Appleton Tower Concourse and Conference Officials will be glad to assist delegates with their calls.
5. MEDICAL CARE. Delegates are welcome to use the services provided by the University Health Centre, housed within the Students' Centre.
Medical: Consulting Hours Mon.-Fri. 09.15-10.15 and 12.30-14.30.
Dental: Telephone for appointment. 667 1011 ext. 2520.
6. SIGNS AND MAPS. We shall endeavour to provide all the signs necessary to enable participants to go rapidly and directly to whichever session they require. Official signs will carry the letters 'EMS'. A map is given on the back of this programme showing the location of the Pollock Halls, the hotels we are using and the Conference Centre. Please consult it.
7. PARKING PERMITS. Permits enabling delegates to park their vehicles in the University Car Park behind the Appleton Tower can be purchased upon arrival at a cost of approximately £1.00. However, since parking places are restricted, we suggest that delegates leave their cars at Pollock Halls and take the free bus. Public Car Parks are available in the vicinity of the hotels and the Appleton Tower. Within the Pollock Hall Grounds parking must be restricted to the white numbered spaces. No charge is made.
8. LAUNDRY AND KITCHEN FACILITIES. Washing machines are available for guests' use in most Houses at the Pollock Halls. Kitchen facilities for the preparation of light refreshments are also available. We would ask all Pollock Hall residents to consult the Information Folder which will be placed in every room.
9. FACILITY CARDS. Delegates staying at the Pollock Halls will be provided with facility cards permitting them to use, free of charge, the Royal Commonwealth Swimming Pool, adjacent to Pollock Halls.

F. EDINBURGH

1. WEATHER. The temperature in July in Edinburgh may exceed 25°C but delegates should be prepared for slightly lower temperatures. Rainfall on the East Coast is relatively light, averaging about 25 inches per year.
2. GOLF. Edinburgh has several fine public golf courses which can be used for a very small fee. Arrangements have also been made with local private clubs for delegates to use their courses at very reasonable charges. Come prepared if you are an enthusiast!
3. PUBLIC TRANSPORT. There is a comprehensive network of bus routes in Edinburgh and generally speaking the buses run every 10-15 minutes until 23.00 hrs. It is important to note that on virtually all services exact fares are necessary and no change will be given. The fare tariff is as follows:

1 stage	: 5p	Most journeys in the City fall into one of these categories.
2-3 stages	: 10p	
4-6 stages	: 15p	
7-12 stages	: 20p	
13 stages and over	: 25p	
night time, flat rate	: 30p	
Child: 1 stage	: 5p	
over 1 stage, flat rate:	8p.	

GENERAL INFORMATION

4. TAXIS. The following are the main taxi firms in Edinburgh.

City Cabs	228 1211
Central Radio Taxis	229 5221
Radiocabs (Edinburgh) Ltd.	225 7661
Regal Cabs	663 8236
West End Cabs	225 4446
Wilson's Taxis	665 2799

5. SHOPPING HOURS – Generally Monday to Saturday 9.00 to 17.30 hrs. Some larger department stores remain open until 20.00 hrs on Thursdays.

6. SHOPPING INFORMATION FOR VISITORS FROM OVERSEAS.

If you intend to make large purchases of, for example, Edinburgh crystal, tweeds, tartans and woollens, it is worthwhile taking along your passport as Value-Added-Tax can then be waived. (The items could be mailed to your home address, if desired.) It is important that you keep all receipts so that they can be produced for the Customs Authorities.

G. MEETINGS OF SPONSORS

- | | | |
|--------------------------|---------------------------------------|--------------------------------------|
| 1. IAEMS Council Meeting | 12.00-14.00 hrs. | Sunday, July 10 |
| 2. EEMS Council Meetings | 14.00-19.00 hrs.
and 14.00 onwards | Sunday, July 10
Friday, July 15th |

H. PROJECTION FACILITIES

Facilities will be available only for the projection of 2" x 2" (5cm x 5cm) slides. These should be handed to the operator before the start of the appropriate session. Overhead projection is also available.

I. PRESS POLICY

All scientific sessions will be closed to the press but press representatives will have access to the abstracts of all contributions and to the poster displays. The Press Officer, Dr. Peter Brookes, will be available to arrange any meetings requested between the press and individual contributors.

PROCEEDINGS

The Proceedings will be published in book form before the end of 1977 by Elsevier, North Holland. The book will contain the Plenary and Symposium lectures together with a limited number of contributed papers reflecting the scope of the Conference as a whole and particularly those areas given priority by the Programme Committee. Publication of the Proceedings is being sponsored by the Umweltbundesamt of the Federal German Republic.

Abstracts of all papers and posters will be published in *Mutation Research*. Contributors may submit revised abstracts to the editorial desk up to the last day of the Conference.

SUMMARY OF SCIENTIFIC PROGRAMME

The Summary Timetable of Scientific and Social events is given on the back cover of the Programme Book. The Scientific Programme consists of:

A. PLENARY LECTURES

1. The relative contribution of mutant genes and chromosome abnormalities to genetic ill-health in man. C. O. Carter.
2. The relationship between mutagenesis, carcinogenesis and teratogenesis. P. N. Magee.
3. DNA repair mechanisms in human cells. J. E. Cleaver.
4. Fundamental mutagenic mechanisms. J. W. Drake.
5. Molecular mechanisms in the induction of chromosome aberrations. H. J. Evans.

B. SYMPOSIA

1. Genetic health protection:
 - (a) Experience with ionising radiation. K. Sankaranarayanan.
 - (b) Nature and levels of environmental mutagens, industrial exposure and populations at risk. D. Neubert.
 - (c) Protective measures. D. P. Rall.
2. Critical appraisal of methods in mutagenicity testing:
 - (a) Submammalian systems. T. Sugimura.
 - (b) Mammalian cell cultures. C. F. Arlett.
 - (c) Gene mutations in mammals. H. V. Malling.
 - (d) Chromosome aberrations in mammals. J. G. Brewen.

followed by a Panel discussion on this topic.

C. PANEL DISCUSSIONS

1. Extrapolation from experimental test systems for evaluation of genetic risks in man.
F. H. Sobels (Convener).
2. Training and education in the field of environmental mutagenesis. F. J. de Serres (Convener).
3. Legislative requirements and industrial response. C. Ramel (Convener).

D. CONTRIBUTED PAPERS under the following headings.

1. Industrial experience of mutagenicity testing.
2. New methods of mutagenicity testing:
 - (a) Mammalian germ cells.
 - (b) Mammalian somatic cells.
 - (c) Submammalian cells.
3. Dose-rate and low dose effects and the problem of thresholds.
4. Utilisation and evaluation of short-term tests:
 - (a) Bacterial systems.
 - (b) Fungal systems.
 - (c) Cytogenetics.
 - (d) Mutation in cultured mammalian cells.
 - (e) Combinations and comparisons of systems.
5. Interaction of mutagens with each other and with other agents.
6. Metabolic activation of mutagens.
7. Studies in man.
8. Use of mammalian germ cells.

Contributed papers will usually be in three parallel Sessions. *A Summary of the Contributed Paper Sessions is given, for easy access, on the last page of this Programme Book.*

Contributed papers are of 15 minute duration (including discussion) and must be kept strictly to the time schedule shown in this Programme; chairpersons have been instructed accordingly.

Contributors should keep their talks to less than 12 minutes to allow time for discussion. If a particular Contributed paper is cancelled the appropriate 15-minute interval will be left free; subsequent papers will not be moved forward.

E. POSTER CONTRIBUTIONS in the following Groups:

1. Prokaryote test systems (Posters 1-23).
2. Mutation in somatic cells of eukaryotes (Posters 24-33).
3. Mutation in germ cells of eukaryotes. (Posters 34-40).
4. Combinations and comparisons of test systems. (Posters 41-48).
5. Cytogenetics and dominant lethality. (Posters 49-71).
6. DNA damage, repair and misrepair. (Posters 72-85).

Poster contributions will be exhibited in the Appleton Tower throughout the Conference and will be manned by contributors at the specific times shown in the Summary Timetable (inside back cover).

Poster Groups 1-4 will be located in the Concourse area and Groups 5 and 6 in the Laboratory on the 8th level of the Appleton Tower.

Titles of Poster contributions are given on the gold-coloured pages at the end of this Programme Book.

LOCATIONS Plenary lectures, Symposia and Panel Discussions 1 and 3 will be held in the George Square Theatre. Contributed Papers, Poster Sessions and Panel Discussion 2 in the Appleton Tower.

COLOUR CODE In the pages which follow the events of the Conference are given chronologically using a different colour for each day, i.e.

MONDAY	—	Lavender
TUESDAY	—	Yellow
WEDNESDAY	—	Blue
THURSDAY	—	Pink
FRIDAY	—	Green

followed by:

TITLES OF POSTERS	—	Gold
INDEX OF CONTRIBUTORS	—	White

The same colours are used in the **ABSTRACT** Book.

MONDAY, JULY 11th

0945 OPENING CEREMONY George Square Theatre

- B. A. Bridges: President of the Conference and of the European Environmental Mutagen Society.
- Sir Hugh Robson: Principal and Vice-Chancellor of the University of Edinburgh.
- A. Hollaender: President of the International Association of Environmental Mutagen Societies and Hon. Vice-President of the Conference.

Platform

- Charlotte Auerbach (Hon. President of the Conference).
- I. A. Rapoport, Y. Tazima, K. Sundaram (Hon. Vice-Presidents of the Conference).
- P. Brookes (Secretary-General), B. J. Dean (Treasurer).
- F. H. Sobels (Chairman of the Programme Committee and Vice-President, IAEMS).
- D. Scott (Executive-Secretary of the Programme Committee).
- B. J. Kilbey (Chairman of the Local Committee).
- H. Böhme (Vice-President, EEMS).

1015 PLENARY LECTURE 1 George Square Theatre.

Chairwomen: Charlotte Auerbach (Great Britain).

The relative contribution of mutant genes and chromosome abnormalities to genetic ill-health in man.

C. O. Carter (Great Britain).

1130 Three parallel Sessions (1, 2 and 3) of Contributed Papers (see pages 17-19).

MONDAY, JULY 11th

CONTRIBUTED PAPER SESSION 1. Room 2 Appleton Tower

STUDIES IN MAN I

Chairmen: R. Olembo (Kenya), G. Rohrborn (FDR).

1130 *Mutagenic effects of different mutagens on human chromosomes in vitro and in vivo as detected by conventional and 'harlequin' methods.*
M. Kučerová and Z. Polívková (Czechoslovakia).

1145 *Chromosome analysis of children exposed to the emission of a lead smelting plant.*
J. Dresp, M. Bauchinger, E. Schmid and N. Englert (FDR).

1200 *Cytogenetic investigations on lymphocytes from workers exposed to vinyl chloride.*
A. Léonard, G. Decat and E. D. Léonard (Belgium).

1215 *Identification of first division metaphases for the analysis of chromosome aberrations in cultured human lymphocytes.*
P. E. Crossen and W. F. Morgan (New Zealand).

1230 *6-Thioguanine resistant lymphocytes in human peripheral blood.*
G. H. Strauss and R. J. Albertini (USA).

1245 End of Session.

Lunch available between 1200 and 1415 at the Student Centre Refectory (see map on back cover).

MONDAY, JULY 11th

CONTRIBUTED PAPER SESSION 2. Room 3 Appleton Tower

INTERACTION OF MUTAGENS WITH EACH OTHER AND WITH OTHER AGENTS

Chairpersons: Aleksandra Putrament (Poland) and R. F. Kimball (USA).

1130 *The effect of simultaneous treatment of E.coli by chemical mutagens and radiation on the mutation rate.*

G. Hotz (FDR).

1145 *Co-operative mutagenic actions of bisulfite and nitrogen nucleophiles.*

H. Hayatsu (Japan).

1200 *Analysis of mutagen-antimutagen reactions in food and food additives by the rec-assay and reversion-assay procedures.*

T. Kada, Y. Sadaie and M. Hara (Japan).

1215 *Potential carcinogenicity of some food preservatives in the presence of traces of nitrite.*

B. Khoudokormoff (The Netherlands).

1230 *Effects of combination treatments with ethyl methanesulphonate (EMS) and caffeine or maleic hydrazide on induction of lethals in Drosophila melanogaster.*

M. M. Nawar and H. A. Hamza (Egypt).

1245 End of Session.

Lunch available between 1200 and 1415 at the Student Centre Refectory (see map on back cover).

MONDAY, JULY 11th

CONTRIBUTED PAPER SESSION 3. Room 4 Appleton Tower

NEW METHODS OF MUTAGENICITY TESTING: MAMMALIAN GERM CELLS

Chairmen: W. M. Generoso (USA), G. L. Wolff (USA).

~~1130 A biochemical specific locus mutation system in mice.~~ *Non-disjunction in the mouse!*
~~H. V. Mallig and L. R. Valcovic (USA).~~

1145 *Inhibition of testicular DNA synthesis by chemical mutagens and carcinogens as a valid mammalian short term testing procedure.*
J. P. Seiler (Switzerland).

1200 *Non-disjunction by mutagenic agents in male germ cells of the northern vole*
Microtus oeconomus.
A. D. Tates (The Netherlands).

1215 *EMS and MMS induced meiotic non-disjunction in the male mouse.*
G. Szemere (Hungary).

1230 *Genetic structure of test animal population for in vivo mutagenicity assays.*
G. L. Wolff (USA).

1245 End of Session.

Lunch available between 1200 and 1415 at the Student Centre Refectory (see map on back cover).

MONDAY, JULY 11th

1330-

1530 **POSTER SESSION** manned by Contributors

Titles of Posters given on the Gold pages at the end of this Programme Book.

Posters exhibited in the APPLETON TOWER, Numbers 1-48 in the Concourse Area, Numbers 49-85 in the Laboratory on the 8th Level.

1530 SYMPOSIUM 1. George Square Theatre

GENETIC HEALTH PROTECTION

Chairpersons: Liane B. Russell (USA), P. Brookes (Great Britain).

1530 (a) *Experience with ionising radiation.*

K. Sankaranarayanan (The Netherlands).

1610 (b) *Nature and levels of environmental mutagens, industrial exposure and populations at risk.*

D. Neubert (FDR).

1650 (c) *Protective measures.*

D. P. Rall (USA).

1730 End of Symposium.

2030 Civic Reception, Assembly Room, George Street. See page 9 for details.

TUESDAY, JULY 12th

0915 **PLENARY LECTURE 2.** George Square Theatre

Chairman: B. N. Ames (USA).

The relationship between mutagenesis, carcinogenesis and teratogenesis.

P. N. Magee (USA).

1015 Interval

1045 **PANEL DISCUSSION 1.** George Square Theatre

Convenor: F. H. Sobels (The Netherlands).

Extrapolation from experimental test systems for evaluation of genetic risks in man.

Panel Members:

N. P. Bochkov (USSR), L. Ehrenberg (Sweden), J. A. Heddle (Canada), P. F. Infante (USA), A. Malashenko (USSR), A. G. Searle (Great Britain), K. Sundaram (India).

1230 **GENERAL ASSEMBLY EEMS.** George Square Theatre

1300 Lunch

1415 Three parallel Sessions (4, 5 and 6) of Contributed papers (see pages 22-24).

TUESDAY, JULY 12th

CONTRIBUTED PAPER SESSION 4. Room 2 Appleton Tower

UTILISATION AND EVALUATION OF SHORT TERM TESTS: CYTOGENETICS

Chairmen: K. Bora (Canada), N. Luchnik (USSR).

1415 *Cytogenetics in short term tests.*

L. O. Hughes and J. C. Topham (Great Britain).

~~1430~~ *Difficulties arising from the use of bone marrow cells as a test system for chromosome breakage.*

J. Moutschen, M. Moutschen-Dahmen, N. Degraeve, N. Houbrechts, J. Gilot-Delhalle and A. Colizzi (Belgium).

1445 *The evaluation of micronucleus test as an in vivo cytogenetic technique in mouse.*

R. C. Chaubey, B. R. Kavi, P. S. Chauhan and K. Sundaram (India).

~~1500~~ *Further studies on cytogenetic effects of folpet.*

S. R. Sirianni (USA).

1515 *Mitotoxicity of β -exotoxin and δ -endotoxin protein from Bacillus thuringiensis*

R. K. Sahu, B. B. Panda and C. B. S. R. Sharma (India).

1530 Interval

1600 Three parallel Sessions (7, 8 and 9) of Contributed papers (see pages 25-27).

TUESDAY, JULY 12th

CONTRIBUTED PAPER SESSION 5. Room 3 Appleton Tower

UTILISATION AND EVALUATION OF SHORT TERM TESTS: FUNGAL SYSTEMS

Chairmen: R. Haynes (Canada), G. Morpurgo (Italy).

- ~~1415~~ *Determination of REC values for some widely used chemical mutagens.*
M. S. Murthy, N. Sankaranarayanan and U. Madhvanath (India).
- 1430 *Mutagenicity of chlorinated phenoxyacetic acids in Saccharomyces cerevisiae.*
G. Zetterberg (Sweden).
- 1445 *Variation in the induction of mitotic gene conversion by chemical mutagens.*
P. J. Davies, R. S. Tippins and J. M. Parry (Great Britain).
- 1500 *Use of the tester strains N23 and N24 for the detection of the mutagenicity of environmental agents and chemical carcinogens in Neurospora crassa.*
T. Ong, W. Whong and J. Guthrie (USA).
- 1515 *Effect of the excision-repair-deficient mutation uvs-2 on the mutagenic and killing activities of seven mutagens in heterokaryons of Neurospora crassa.*
H. E. Brockman, C. Y. Hung, T. M. Ong and F. J. de Serres (USA).
- 1530 Interval
- 1600 Three parallel Sessions (7, 8 and 9) of Contributed papers (see pages 25-27).

TUESDAY, JULY 12th

CONTRIBUTED PAPER SESSION 6. Room 4 Appleton Tower

UTILISATION AND EVALUATION OF SHORT TERM TESTS: BACTERIAL SYSTEMS I

Chairmen: C. Clarke (Great Britain), G. Mohn (The Netherlands).

1415 *Evaluation of organic extracts of drinking water by bacterial mutagenesis.*
J. C. Loper, R. S. Schoeny and R. C. Tardiff (USA).

1430 *Mutagenic activity of chemicals identified in drinking water.*
V. F. Simmon, K. Kauhanen, K. Mortelmans and R. Tardiff (USA).

1445 *Mutagenicity of six Indian hair dyes tested in Salmonella typhimurium strains.*
M. H. Bajaj and N. K. Notani (India).

1500 *The predictive value for animal carcinogenicity of mutagenicity in the Salmonella/microsome test.*
B. N. Ames, J. McCann and C. Sawyer (USA).

1515 *Deficiencies in the microbial activation system for mutagenic-carcinogenic screening.*
S. Rinkus and M. Legator (USA).

1530 Interval

1600 Three parallel Sessions (7, 8 and 9) of Contributed papers (see pages 25-27).

TUESDAY, JULY 12th

CONTRIBUTED PAPER SESSION 7 Room 2 Appleton Tower

INDUSTRIAL EXPERIENCE OF MUTAGENICITY TESTING

Chairpersons: Diana Anderson (Great Britain), B. A. Jackson (USA).

- 1600 *Report of the APBI working party on mutagenicity.*
B. J. Leonard (Great Britain).
- 1615 *Study of the mutagenic potential of Captan by the heritable translocation test in mice.*
T. A. Jorgenson, C. J. Rushbrook, G. W. Newell and M. Waters (USA).
- 1630 *Comparison of dominant lethal and heritable translocation effects after treatment with ethyl methanesulphonate (EMS) and shikimic acid.*
D. Anderson, M. C. E. Hodge and I. F. H. Purchase (Great Britain).
- 1645 *Application of short-term microbial mutagenicity tests in the identification and development of non-toxic, non-absorbable food additives.*
J. P. Brown, R. J. Brown and G. W. Roehm (USA).
- 1700 *Experience and correlation of bacterial mutagenic tests.*
P. A. Watkins (Great Britain).
- 1715 *Evaluation of chemicals with bacterial mutagenicity and DNA-damage assays.*
B. K. Bhuyan, D. M. Zimmer, G. Petzold and J. A. Swenberg (USA).
- 1730 *Comparative studies of 14 mutagenic or carcinogenic substances in seven mutagenicity test systems (point mutation tests, cytogenetic tests and the dominant lethal test).*
D. Müller, P. Arni, H. Fritz, Margret Langauer and F. F. Strasser (Switzerland).
- 1745 *Experience with mutagenic tests as indicators of carcinogenic activity.*
K. I. Cinkotai, C. C. Jones, J. C. Topham and P. A. Watkins (Great Britain).
- 1800 End of Session.

1978
1538

Shoeny paper re 2AA vs 5-9

TUESDAY, JULY 12th

CONTRIBUTED PAPER SESSION 8. Room 3 Appleton Tower

NEW METHODS OF MUTAGENICITY TESTING: MAMMALIAN SOMATIC CELLS

Chairmen: E. H. Y. Chu (USA) and H. Stich (Canada).

1600 *In vivo somatic mutation systems in the mouse.*

Liane Brauch Russell (USA).

1615 *Detection of chemically induced somatic mutation in tissues of Chinese hamsters.*

B. J. Dean and K. R. Senner (Great Britain).

1630 *A mutagen screening test for UV-mimetic chemicals based on differential killing of human cell lines.*

Ann D. Burrell, June J. Andersen (USA).

1645 *The nucleus anomaly test as a sensitive method of detecting mutagenic effects on somatic cells.*

Margret Langauer and D. Müller (Switzerland).

1700 *Induction of sister chromatid exchanges in mammalian cells by low concentrations of mutagenic carcinogens that require metabolic activation as well as by those that do not.*

Sheldon Wolff (USA).

1715 *Are sister chromatid exchanges a measure of single gene mutations?*

A. V. Carrano, L. H. Thompson, J. L. Minkler and P. L. Lindl (USA).

1730 *A new automated system for chromosome preparations.*

J. Melnyk, G. Persinger, B. Mount, W. Stickel, W. Porter and R. Keenan (USA).

1745 *Diffusion chamber cultures for mutagenic and carcinogenic assays.*

C. C. Huang and M. Furukawa (USA).

1800 End of Session.

TUESDAY, JULY 12th

CONTRIBUTED PAPER SESSION 9. Room 4 Appleton Tower

METABOLIC ACTIVATION OF MUTAGENS

Chairmen: R. C. Garner (Great Britain), E. Huberman (USA).

1600 *Further assessment of a test for determining the mutagenicity of compounds metabolised in vivo in the rat.*

L. J. Lilly and M. F. Newton (Great Britain).

1615 *Mutagenicity of arylalkyl- and of arylacetyltriazenes following activation by S-9 fractions from rat liver, kidney and brain tissue in S. typhimurium TA100.*

B. L. Pool (FDR).

1630 *Selection of species for cancer bioassay for naphthylamine-containing food colours on the basis of tissue-mediated mutagenicity.*

D. R. Stoltz, R. Bendall, B. Stavric and I. C. Munro (Canada).

1645 *Detection of electrophilic metabolites of halogenated olefins with 4-(4-nitrobenzyl)pyridine (NBP) or with Salmonella typhimurium.*

A. Barbin, G. Planche, A. Croisy, C. Malaveille and H. Bartsch (France).

1700 *The mutagenicity and metabolism of 1,2-dichloroethane.*

U. Rannug and C. Ramel (Sweden).

1715 *The metabolic activation of vinyl chloride in vitro.*

K. M. Ivanetich, D. Katz and I. Aronson (South Africa).

1730 *Control of benzo(a) pyrene(BP)-induced mammalian cell mutagenesis and cytotoxicity by exogenous enzyme fractions.*

L. M. Schechtman and R. E. Kouri (USA).

1745 *Role of activation in azide mutagenesis.*

R. A. Nilan and A. Kleinhofs (USA).

1800 End of Session

WEDNESDAY, JULY 13th

0915 **PLENARY LECTURE 3.** George Square Theatre

Chairman: I. A. Rapoport (USSR).

DNA repair processes in human cells.

J. E. Cleaver (USA).

1015 Interval

1045 **PANEL DISCUSSION 2,** in parallel with two Contributed Paper Sessions (10 and 11, see pages 29, 30).

1045 **PANEL DISCUSSION 2.** Room 4 Appleton Tower

Convener: F. J. de Serres (USA).

Training and education in the field of environmental mutagenesis.

Panel Members:

A. Hollaender (USA), B. J. Kilbey (Great Britain), M. S. Legator (USA), N. K. Notani (India), F. E. Würgler (Switzerland), G. Zetterberg (Sweden).

See pages 29, 30 for parallel Contributed paper sessions 10 and 11.

WEDNESDAY, JULY 13th

CONTRIBUTED PAPER SESSION 10. Room 2 Appleton Tower

UTILISATION AND EVALUATION OF SHORT TERM TESTS: MUTATION IN CULTURED MAMMALIAN CELLS

Chairpersons: Margaret Fox (Great Britain) & R. J. Albertini (USA).

- 1045 *A linear relationship between tumorigenic potency in vivo and mutagenic potency at the heterozygous thymidine kinase (TK + / -) locus of L5178Y mouse lymphoma cells coupled with mammalian metabolism.*
D. Clive (USA).
- 1100 *The effects of expression time on the frequency of carcinogen-induced mutants at the TK and HGPRT loci in mouse lymphoma cells.*
M. M. M. Brown and D. Clive (USA).
- 1115 *Mutability of difference genetic loci in mammalian cells by metabolically activated chemical carcinogens.*
E. Huberman (USA).
- 1130 *Induction of azaguanine-resistant human diploid fibroblasts by N-methyl-N'-nitro-N-nitrosoguanidine (MNNG): Quantitative studies.*
L. Jacobs and R. de Mars (USA).
- 1145 *Lack of cytotoxicity and mutagenicity of ultra human fibroblasts as contrasted with cells deficient in DNA repair.*
V. M. Maher and J. J. McCormick (USA).
- 1200 *The measurement of induced mutation frequencies in V79 Chinese hamster cells: A reappraisal of methodology.*
S. McMillan and Margaret Fox (Great Britain).
- 1215 *Non-mutational origin of drug resistance after exposure of mammalian cells to purine analogues in vitro.*
Margaret Fox (Great Britain).
- 1230 End of Session.

Afternoon Official Excursions

WEDNESDAY, JULY 13th

CONTRIBUTED PAPER SESSION 11. Room 3 Appleton Tower

INTERACTION OF MUTAGENS WITH EACH OTHER AND WITH OTHER AGENTS II.

Chairmen: B. Cattanaach (Great Britain), A. M. Clark (Australia).

1045 *The action of two sulphhydryl compounds on the induction of sister chromatid exchanges by Trenimon in human lymphocytes.*

E. Gebhart and H. Kappauf (FDR).

1100 *Combined action of alkylating compounds on human chromosomes.*

N. P. Bochkov, K. N. Yakovenko and S. A. Nazarenko (USSR).

1115 *Some interactions affecting the mutagenicity potential of dipyrene, hexachlorophene, thiodan and malathion.*

C. Y. Lim-Sylianco (Philippines).

1130 *Radiosensitisation of mouse bone-marrow cells by a commonly used food additive, propyl gallate.*

O. P. Kamra and G. Bhaskar (Canada).

1145 *Inhibition and enhancement of the action of mutagens by chemical, physical and viral modulating factors*

L. Lo, P. Lam and H. F. Stich (Canada).

1200 *Synergistic interaction of hydrogen peroxide and near ultra-violet radiation.*

A. Eisenstark, H. M. Ananthaswamy and P. S. Hartman (USA).

1215 *Co-operative denaturing effect of heat and UV on DNA in human squamous cells.*

D. Roth (USA).

1230 End of Session.

Afternoon Official Excursions

THURSDAY, JULY 14th

0915 SYMPOSIUM 2. George Square Theatre

CRITICAL APPRAISAL OF METHODS IN MUTAGENICITY TESTING

Chairpersons: Mary F. Lyon (Great Britain), H. Böhme (DDR).

0915 (a) *Submammalian systems*
T. Sugimura (Japan).

0945 (b) *Mammalian cell cultures*
C. F. Arlett (Great Britain).

1015 Interval

1045 SYMPOSIUM 2 (continued)

1045 (c) *Gene mutations in mammals*
H. V. Malling (USA).

1115 (d) *Chromosome aberrations in mammals.*
J. G. Brewen (USA).

1145 **PANEL DISCUSSION** on subject of SYMPOSIUM 2

Convener: H. Böhme (DDR).

Panel Members:

P. S. Chauhan (India), Mary F. Lyon (Great Britain), B. E. Matter (Switzerland), V. Mayer (USA), J. Schöneich (DDR), E. W. Vogel (The Netherlands), plus the Symposium Speakers.

1230 End of Panel Discussion.

1230-

1415 Poster Session manned by Contributors (see gold pages at the end of Programme for poster titles).

1415 Three parallel Sessions (12, 13 and 14) of Contributed Papers (see pages 32-34).

THURSDAY, JULY 14th

CONTRIBUTED PAPER SESSION 12. Room 2 Appleton Tower

STUDIES IN MAN II.

Chairmen: A. Léonard (Belgium), R. C. von Borstel (Canada).

1415 *Chronic irradiation effects in blood lymphocyte chromosomes of plutonium workers.*

W. Broman, A. Bloom, P. Archer and R. Bistline (USA).

1430 *Cytogenetic studies of a boy criminally exposed to Curie sources of cesium-137.*

Mary Esther Gauden, V. P. Collins and Michael J. Hinton (USA).

1445 *Radiosensitivity in man.*

A. M. R. Taylor (Great Britain).

1500 *A cytogenetic schedule to assess multiple parameters from a single preparation applicable to screen population exposed to environmental mutagens.*

J. P. Chaudhuri (FDR).

1515 *Technical and theoretical considerations in evaluating individual variations in human unscheduled DNA synthesis.*

D. Delozier and R. Antley (USA).

1530 Interval

1600 Three parallel Sessions (15, 16 and 17) of Contributed Papers (see pages 35, 36 and 37).

THURSDAY, JULY 14th

CONTRIBUTED PAPER SESSION 13. Room 3 Appleton Tower

USE OF MAMMALIAN GERM CELLS

Chairpersons: Ilse-Dore Adler (FDR), J. Moutschen (Belgium).

1415 *A comparative study of the effect of various chemicals on mice spermatogonial cells.*

D. Bhattacharjee, T. K. Shetty and K. Sundaram (India).

1430 *Does ethanol cause chromosomal aberrations?*

D. B. McGregor and A. de S. Wickramaratne (Great Britain).

1445 *Failure of ethyl alcohol to induce dominant lethal mutations in Wistar rats or to synergise the effect of ethylmethanesulfonate and X-rays in mice.*

Pawan S. Chauhan, M. Aravindakshan and K. Sundaram (India).

1500 *Comparison between radiation and chemicals in the time of formation of chromosome aberrations induced in male germ cells of mice.*

W. M. Generoso, Katherine T. Cain, Sandra W. Huff and M. Krishna (USA).

1515 *Excessive mutational occurrences in wild house mice.*

Margaret E. Wallace and R. J. Berry (Great Britain).

1530 Interval

1600 Three parallel Sessions (15, 16 and 17) of Contributed Papers (see pages 35, 36 and 37).

THURSDAY, JULY 14th

CONTRIBUTED PAPER SESSION 14. Room 4 Appleton Tower

UTILISATION AND EVALUATION OF SHORT TERM TESTS: BACTERIAL SYSTEMS II

Chairmen: R. Devoret (France), H. Nishioka (Japan).

1415 *An improved method for detecting mutagens.*

T. Yahagi, M. Nagao, T. Matsushima, Y. Seino, N. Sawamura, A. Shirai, Kawachi and T. Sugimura (Japan).

1430 *On mutagens in foods, especially on compounds from pyrolysis of protein.*

M. Nagao, T. Yahagi, T. Kawachi, Y. Seino, M. Honda, N. Matsukura, Sugimura, K. Wakabayashi, K. Tsuji and T. Kosuge (Japan).

1445 *Mutagenicity screening of feed additives in microbial systems.*

Y. Shirasu, M. Moriya and K. Kato (Japan).

1500 *Mutagenicity of metal compounds.*

K. Kanematsu and T. Kada (Japan).

1515 *Mutagenicity test by means of the intrasanguine host-mediated assay with typhimurium as indicator organism.*

P. Arni, Th. Mantel, E. Deperade and D. Muller (Switzerland).

1530 Interval

1600 Three parallel Sessions (15, 16 and 17) of Contributed Papers (see pages 35, 36 and 37).

THURSDAY, JULY 14th

CONTRIBUTED PAPER SESSION 15. Room 2 Appleton Tower

DOSE-RATE AND LOW DOSE EFFECTS AND THE PROBLEM OF THRESHOLDS

Chairmen: N. P. Dubinin (USSR), U. H. Ehling (FDR).

- 1600 *Sensitivity of dominant lethal assay in male mice.*
U. H. Ehling (FDR).
- 1615 *Testing for weak mutagens with mammalian test systems.*
H. U. Aeschbacher (Switzerland).
- 1630 *Use of the betabinomial distribution when testing for weak mutagenic activity in the dominant lethal test.*
L. Vuatez and J. Sotek (Switzerland).
- 1645 *Low dose-rate experiment with tritiated thymidine as a simulator of chemical mutagens using silkworm oocyte system.*
Y. Tazima (Japan).
- 1700 *Effect of continuous low-level gamma radiation on the stem and differentiating spermatogonia of the adult rat.*
B. H. Erickson (USA).
- 1715 *Dose-rate effects of ethyl methanesulphonate on induction of 6-thioguanine-resistant mutations in cultured Chinese hamster cells.*
Y. Kuroda and K. Sugiura (Japan).
- 1730 *Apparent and real thresholds: A study of two mutagens.*
J. P. Seiler (Switzerland).
- 1745 *Linear relation of alkylation to mutation in Drosophila.*
W. R. Lee, C. S. Aaron, F. C. Janca and P. M. Skinner (USA).
- 1800 End of Session.
- 2000 Conference Dinner and Scottish Evening (see page 9).

THURSDAY, JULY 14th

CONTRIBUTED PAPER SESSION 16. Room 3 Appleton Tower

UTILISATION AND EVALUATION OF SHORT TERM TESTS: COMBINATIONS AND COMPARISONS OF SYSTEMS

Chairmen: G. W. P. Dawson (Ireland), T. Kada (Japan).

- 1600 *Comparative mutagenesis of test materials from the synthetic fuel technology.*
J. L. Epler, F. W. Larimer, C. E. Nix, T. Ho and T. K. Rao (USA).
- 1615 *Comparative mutagenesis of nitrosopiperidines.*
C. E. Nix, T. K. Rao, F. W. Larimer and J. L. Epler (USA).
- 1630 *Mutagenicity of hair dyes: Some more evidence and the problems of interpretation.*
S. Venitt (Great Britain).
- 1645 *Mutagenic assays with bis-(2-chloroisopropyl) ether.*
V. F. Simmon, L. Hedden, D. Poole and R. Tardiff (USA).
- 1700 *Comparative studies on the relation between reaction kinetics and mutagenic action of monofunctional alkylating agents in Drosophila (in vivo) and Chinese hamster cells (in vitro).*
E. Vogel and A. T. Natarajan (The Netherlands).
- 1715 *Two in vivo assays for mutagenicity compared: The sperm abnormality and micronucleus assays.*
W. R. Bruce and J. A. Heddle (Canada).
- 1730 *About comparative sensitivity of certain methods of 'drugs' mutagenicity estimation.*
J. Revazova, L. Radchenko, V. Bratslavsky and M. Podolnaya (USSR).
- 1745 *The relationship of unscheduled DNA synthesis to mutagenesis and chromosomal aberrations.*
A. D. Mitchell, J. M. Clarkson, D. E. Robinson, D. T. Tajiri, T.-J. A. Kan and G. P. Sterling (USA).
- 1800 End of Session.
- 2000 Conference Dinner and Scottish Evening (see page 9).

THURSDAY, JULY 14th

CONTRIBUTED PAPER SESSION 17. Room 4 Appleton Tower

NEW METHODS OF MUTAGENICITY TESTING: SUBMAMMALIAN CELLS

Chairpersons: Myrtle J. Fahmy (Great Britain), S. Igali (Hungary).

1600 *The use of marked Y chromosome for mutagenicity testing in Drosophila.*
J. K. Lim (USA).

1615 *Mutagen-sensitive mutations of Drosophila melanogaster.*
D. P. Smith (USA).

1630 *A Neurospora screening system for agents which increase meiotic nondisjunction.*
A. J. F. Griffiths (Canada).

1645 *The detection of chromosome non-disjunction in the yeast Saccharomyces cerevisiae.*
J. M. Parry (Great Britain).

~~1700~~ *Investigation on the tester strain of Saccharomyces cerevisiae for primary screening of environmental mutagens.*
S. Nakai, I. Machida, T. Saeki and K. Yoshikawa (Japan).

1715 *Continuous cultures: A tool for studying mutagenesis in eukaryotes.*
P. McAthey and B. J. Kilbey (Great Britain).

1730 *Detection of lethal recessives in Aspergillus nidulans.*
G. Morpurgo, S. Puppo, L. Conti and M. Bignami (Italy).

1745 *Super sensitive DNA repair test-liquid for confirming DNA-damagicity of mutagens.*
H. Nishioka (Japan).

1800 End of Session.

2000 Conference Dinner and Scottish Evening (see page 9).

FRIDAY, JULY 15th

0915 PLENARY LECTURE 4. George Square Theatre

Chairman: J. Roberts (Great Britain)

Fundamental mutagenic mechanisms.

J. W. Drake (USA).

0950 PLENARY LECTURE 5. George Square Theatre

Chairman: M. S. Sasaki (Japan).

Molecular mechanisms in the induction of chromosome aberrations.

H. J. Evans (Great Britain).

1030 Interval

1100 PANEL DISCUSSION 3. George Square Theatre

Convener: C. Ramel (Sweden).

Legislative requirements and industrial response.

Panel Members:

M. F. Cuthbert (Great Britain), B. J. Dean (Great Britain), R. Hess (Switzerland),
N. Loprieno (Italy), M. J. Prival (USA), I. F. H. Purchase (Great Britain), ~~V. A. Ray~~
(USA), Y. Tazima (Japan).

1215 CLOSING CEREMONY. George Square Theatre

B. A. Bridges: President of the Conference.

F. H. Sobels: Vice-President, IAEMS.

POSTER CONTRIBUTIONS

Presented in Groups under the headings given on page 15. Groups 1-4 exhibited in the Concourse Area and Groups 5 and 6 in the Laboratory on the 8th level of the Appleton Tower.

Group 1 PROKARYOTE TEST SYSTEMS

(a) BACTERIAL SYSTEMS

- Poster 1 *Investigations into genetic activity of food dyes using rec- and pol- assays with Escherichia coli strains.*
R. B. Smith and R. D. Combes (Great Britain).
- Poster 2 *Forward and reverse mutation induction in E. coli K-12 galE or galU strains by environmental mutagens.*
C. H. Clarke and D. M. Shankel (Great Britain and USA).
- Poster 3 *The effect of bacterial plasmids on mutagenesis.*
C. Monti-Bragadin, N. Babudri, M. Tamaro, M. Cinco and A. M. Molina (Italy).
- Poster 4 *On the mechanisms of the increased mutability and UV resistance conferred by some plasmids.*
T. Arai and T. Ando (Japan).
- Poster 5 *Comparative survey of microsomal activation systems for mutagenic studies of safrole.*
J-L. Dorange, P. Janiaud, M. Delaforge, P. Levi and P. Padieu (France).
- Poster 6 *Mutagenicity of chlorinated cyclopentadienes due to metabolic activation.*
W. Goggelmann, H. Greim, G. Bonse and D. Henschler (FDR).
- Poster 7 *Metabolic activation of nitrofurans by testis homogenate from mammals.*
P. Maier and R. S. Chhabra (Switzerland and USA).
- Poster 8 *Use of intact liver cells and a simplified fluctuation test for metabolic activation of mutagens and carcinogens.*
M. H. L. Green, B. A. Bridges, S. A. Hubbard and J. W. Bridges, (Great Britain).
- Poster 9 *Are fluctuation tests more sensitive than plate tests?*
D. J. MacDonald and R. D. Callander (Great Britain).
- Poster 10 *Some improvements in the mutagenicity testing of chemicals with Bacillus subtilis, Salmonella typhimurium and Escherichia coli, results with 500 chemicals.*
K. Hirano, K. Narui, Y. Sadaie and T. Kada (Japan).
- Poster 11 *On the mutagenicity of some azo-dyes.*
L. Busk and L. Albanus (Sweden).

- Poster 12 *Mutagenicity of some environmental chemicals in Salmonella test systems without microsomal activation.*
J. F. Adams (Philippines).
- Poster 13 *Lack of mutagenicity of extracts from polyethylene in strains of Salmonella typhimurium.*
S. E. Fevolden and M. Moller (Norway).
- Poster 14 *Chemical induction of streptomycin resistance in Streptomyces coelicolor.*
A. Carere, P. Comba, G. Dogliotti and G. Cardamone (Italy).
- Poster 15 *Mutation studies with Micrococcus radiodurans auxotrophs: effects of exposure to radiation, chemicals and combined radiation/chemical treatment.*
D. G. Macphee and M. Kamien-Sarbinowsky (Australia).

(b) BOTH BACTERIAL AND FUNGAL SYSTEMS

- Poster 16 *On the mutagenic action of 2-methyl-3,5-dinitrobenzamide and 3,5-dinitrobenzamide.*
C. E. Voogd (The Netherlands).
- Poster 17 *The mutagenicity of a sauna pine scent product in Salmonella typhimurium and Saccharomyces cerevisiae.*
D. M. De Marini (USA).

(c) FUNGAL SYSTEMS

- Poster 18 *UV-induced mutagenesis in yeast.*
F. Eckardt and R. H. Haynes (Canada).
- Poster 19 *Analysis of mutation induction kinetics in yeast.*
R. H. Haynes and F. Eckardt (Canada).
- Poster 20 *Mutagenicity of industrial compounds evaluated by means of yeast genetic systems.*
S. Fumero, A. Mondino, R. Barale and N. Loprieno (Italy).
- Poster 21 *Genotoxic effects of some agricultural fungicides.*
R. Barale and M. de Bertoldi (Italy).
- Poster 22 *Use of a fluctuation test to detect genetic activity of environmental chemicals in Aspergillus nidulans.*
A. Kappas and N. Demopoulos (Greece).
- Poster 23 *Sodium fluoride and mutagenesis in Neurospora.*
E. Olszewska, B. Kilbey and M. Luker (Great Britain).

Group 2 **MUTATION IN SOMATIC CELLS OF EUKARYOTES**

- Poster 24 *Mutagenicity studies on chemical carcinogens.*
D. Clive (USA).
- Poster 25 *The simultaneous determination of induced mutant frequencies at two loci in mouse lymphoma cells L5178Y.*
Ada G. A. C. Knaap (The Netherlands).

- Poster 26 *Mutagenesis of S49 mouse lymphoma cells.*
P. Coffino, Ursula Friedrich and R. Steinberg (USA).
- Poster 27 *Microsome-mediated mutagenesis of a Chinese hamster cell line by various chemicals.*
C. Drevon, T. Kuroki and R. Montesano (France).
- Poster 28 *Analysis of the mutations induced by styrene oxide in V79 Chinese hamster cells.*
S. Bonatti, G. Corti and A. Mazzaccaro (Italy).
- Poster 29 *Mutagenicity of 8-methoxy-psoralen and long wave ultraviolet irradiation.*
J. W. I. M. Simons and P. M. Burger (The Netherlands).
- Poster 30 *New methods for studying somatic forward and reverse mutation in mice.*
A. G. Searle (Great Britain).
- Poster 31 *The use of transposable genetic elements in Drosophila melanogaster as a fast and sensitive system for mutagenicity testing.*
B. Rasmuson, Helena Svahlin, A. Rasmuson, I. Montell and H. Olofsson (Sweden).
- Poster 32 *Induction and isolation of seed coat colour mutants in French bean.*
P. R. Prasad and A. B. Prasad (India).
- Poster 33 *Somatic mosaicism induced by some carcinogens in soybean (Glycine max).*
A. Arenaz and B. K. Vig (USA).

Group 3 MUTATION IN GERM CELLS OF EUKARYOTES

- Poster 34 *Specific-locus test of the possible effect of polycyclic hydrocarbons in the mouse.*
W. L. Russell (USA).
- Poster 35 *Complete and mosaic lethal mutations induced in mature and immature germ cells in Drosophila by X-irradiation.*
Mary L. Alexander (USA).
- Poster 36 *Linear-quadratic dose kinetics for X-ray induced recessive mutations in Drosophila oogenia.*
Helen Unger Meyer and S. Abrahamson (USA).
- Poster 37 *Mutation induction by indirectly acting mutagens in Drosophila larvae.*
M. J. H. Kortselius and E. Vogel (The Netherlands).
- Poster 38 *Mutagenicity of styrene and styrene oxide in Drosophila tests.*
M. Sorsa, I. Laamanen and H. Vainio (Finland).

Poster 39 *Mutagenicity of nitro compounds in Drosophila melanogaster.*
P. G. N. Kramers (The Netherlands).

Poster 40 *Mutagenic action of viruses in Drosophila.*
S. Gershenson (USSR).

Group 4 COMBINATIONS AND COMPARISONS OF TEST SYSTEMS

Poster 41 *8-methoxypsoralen as a frameshift mutation in bacteria in the dark: Implications for genetic risk in man.*

B. A. Bridges, C. F. Arlett and R. P. Mottershead (Great Britain).

Poster 42 *Evaluation of tris (2,3 dibromopropyl) phosphate for mutagenic and transforming activity in a battery of test systems.*

D. Brusick, D. Matheson and K. Bakshi (USA).

Poster 43 *Quantitative studies of alkyl methane sulfonate induced mutation in Salmonella typhimurium and human lymphoblasts.*

Henry Hoppe IV, T. R. Skopek, Howard L. Liber and W. G. Thilly (USA)

Poster 44 *Rhesus monkeys (Macaca mulatta) in three-tier mutagenicity testing with Mitomycin C.*

H. W. Michelmann, P. Maier, H. V. Malling, D. B. Feldman, S. Huang and G. Ficsor (USA).

Poster 45 *Carcinogenicity and mutagenicity of 47 heteropolycyclic compounds.*

H. R. Glatt, H. Schwind, F. Zajdela, P. C. Jacquignon and F. Oesch (France)

Poster 46 *Correlation among mutagenesis, carcinogenesis and teratogenesis: their response to phenobarbital or caffeine treatment.*

T. Nomura (Japan and USA).

Poster 47 *Mycotoxin mutagenesis: Mutagenic activity of some species of subarctic grain fungi.*

M. Sorsa, K. Linnainmaa and T. Ilus (Finland).

Poster 48 *A method to test plant metabolism on the mutagenicity of pesticides.*

G. Morpurgo, R. Iachetta, I. Camoni, V. A. Ortali and A. Carere (Italy)

Group 5 CYTOGENETICS AND DOMINANT LETHALITY

(a) SOMATIC CELLS

Poster 49 *Mutagenicity of heavy metals.*

Gh. Deknudt (Belgium).

Poster 50 *In vitro- and in vivo mutagenic effects of mercury on human chromosomes.*

L. Verschaeve, M. Kirsch-Volders, L. Hens and C. Susanne (Belgium)

Poster 51 *Cytogenetic and biochemical study of lead exposed population.*

Dj. Horvat and D. Prpic-Majic (Yugoslavia).

- Poster 52 *Clastogenic activity of styrene in occupational exposure.*
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- Poster 53 *Chromosomes after psoralen/UVA treatment in vitro and in vivo (psoriasis patients).*
A. Brøgger and Helga Waksvik (Norway).
- Poster 54 *Chromosome study on patients attempting suicide with chemicals.*
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- Poster 55 *Effect of hemiotherapeutics on frequency of lymphocytes chromosomal aberrations in certain systemic diseases.*
B. Krajinčanić, Z. Žunić and A. Lazarov (Yugoslavia).
- Poster 56 *Sister chromatid exchange in virus transformation.*
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- Poster 57 *Mitotic cycle and production of chromosome structural changes in human cells.*
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- Poster 58 *Chromosome distribution as a parameter for mutagenesis.*
M. Kirsch-Volders, L. Hens, L. Verschaeve, A. Alexander, M. Driesen and C. Susanne (Belgium).
- Poster 59 *Studies on the relationship between SCEs and chromatid aberrations in endoreduplicated cells.*
F. Palitti, A. Becchetti, P. Perticone and G. Diana (Italy).
- Poster 60 *Dose effect relationship in mutagenicity study in rats after acute and chronic exposure to a dithiocarbamate.*
R. Vachkova-Petrova (Bulgaria).
- Poster 61 *In vivo cytogenetic screening of drugs for mutagenic potential.*
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- Poster 62 *Primary tissue culture technique for in vitro cultivation and chromosome preparation in the rabbit, *Oryctolagus cuniculus*.*
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- Poster 63 *Effects of caffeine on the frequencies of chromosomal aberrations and sister chromatid exchanges by mutagenic agents in roots tips of *Vicia faba*.*
B. A. Kihlman and S. Sturelid (Sweden).
- Poster 64 *Cytogenetic hazards from Fensulfothion, Dexon (DAPA) and its degradation product, Dimethyl phenylene diamin (DMPDA).*
B. B. Panda, R. K. Sahu and C. B. S. R. Sharma (India).

(b) SOMATIC AND GERM CELLS

- Poster 65 *Cytogenetical effects of organophosphates in mouse.*
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(c) GERM CELLS

- Poster 66 *Heritable translocations induced in mouse primary spermatocytes.*
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- Poster 67 *A study of the mutagenic potential of N-methyl-N'-nitro-N-nitrosoguanidine (MNNG) in mice by the translocation test.*
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- Poster 68 *In vivo mutagenesis investigations of four GRAS chemicals.*
T. A. Jorgenson, C. J. Rushbrook, G. W. Newell and S. Green (USA).
- Poster 69 *Evaluation of ascorbic acid for mutagenicity by dominant lethal test in male Wistar rats.*
Pawan S. Chauhan, M. Aravindakshan and K. Sundaram (India).
- Poster 70 *Blastocyst recovery in the evaluation of mutagenic hazard.*
J. M. Tesh and F. W. Ross (Great Britain).
- Poster 71 *Developmental abnormalities of early mouse embryos contributing to preimplantation loss.*
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Group 6 DNA DAMAGE, REPAIR AND MISREPAIR

- Poster 72 *Different pathways for excision repair of DNA in human cells.*
B. Strauss, P. Karran, K. Bose and P. Higgins (USA).
- Poster 73 *Distribution of DNA repair in chromatin.*
W. J. Bodell (USA).
- Poster 74 *Evaluation of a short-term test for the detection of genetic damage in human cultured cells.*
A. Abbondandolo, R. Fiorio and M. Durante (Italy).
- Poster 75 *DNA repair systems in human placenta*
L. Hamilton and L. Grossman (USA).
- Poster 76 *Photoreactivation of pyrimidine dimers in human cells.*
K. Mortelmans, E. C. Friedburg and M. Brorsson (USA).
- Poster 77 *The expression of repair genes after fusion of human mutant cells with Chinese hamster cells.*
P. H. M. Lohman and B. Zelle (The Netherlands).
- Poster 78 *The use of cytosine arabinoside for studying the rate and extent of DNA repair in mammalian cells following irradiation or chemical treatment.*
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- Poster 79 *Evaluation of the rat liver DNA damage by Parathion in relation with non-mutagenicity.*
F. Decloitre (France).
- Poster 80 *Satellite DNA, heterochromatin, and rearrangement of the genome.*
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- Poster 81 *7,12-dimethylbenz[a]anthracene-DNA products in mammalian cells and Salmonella strains.*
C. H. Bigger, A. W. Andrews and A. Dipple (USA).
- Poster 82 *Misrepair model for carcinogenesis by 4-nitroquinoline 1-oxide based on its parallelism with mutagenesis in Escherichia coli.*
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- Poster 83 *The isolation and characterisation of a damage dependent endonuclease from Micrococcus luteus.*
S. Riazuddin and L. Grossman (USA).

- Poster 84 *Evidence from Haemophilus influenzae for error-prone repair systems with different mutagen specificities.*
R. F. Kimball, M. E. Boling and S. W. Perdue (USA).
- Poster 85 *Non-dimer endonuclease V-sensitive sites induced in the DNA of bacteriophage T4 by near UV (320nm) irradiation.*
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TIMETABLE FOR VERBAL CONTRIBUTED PAPERS*

<i>MONDAY</i> 1130 to 1245	SESSION 1 (Room 2) Studies in man I	SESSION 2 (Room 3) Interactions I	SESSION 3 (Room 4) New developments: Mammalian germ cell
<i>TUESDAY</i> 1415 to 1530	SESSION 4 (Room 2) Short term tests: Cytogenetic	SESSION 5 (Room 3) Short term tests: Fungi	SESSION 6 (Room 4) Short term tests: Bacteria I
1600 to 1800	SESSION 7 (Room 2) Industrial experience.	SESSION 8 (Room 3) New developments: Mammalian somatic cells.	SESSION 9 (Room 4) Metabolic activation
<i>WEDNESDAY</i> 1045 to 1230 (Parallel with Panel 2)	SESSION 10 (Room 2) Short term tests: Mutation in cultured mammalian cells.	SESSION 11 (Room 3) Interactions II	
<i>THURSDAY</i> 1415 to 1530	SESSION 12 (Room 2) Studies in man II	SESSION 13 (Room 3) Mammalian germ cells	SESSION 14 (Room 4) Short term tests: Bacteria II
1600 to 1800	SESSION 15 (Room 2) Dose rate and thresholds	SESSION 16 (Room 3) Short term tests: Combinations and comparisons	SESSION 17 (Room 4) New developments: Submammalian cells

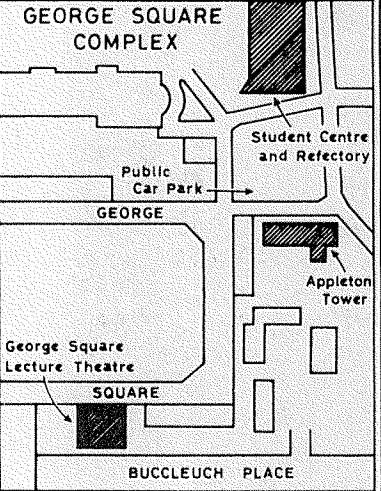
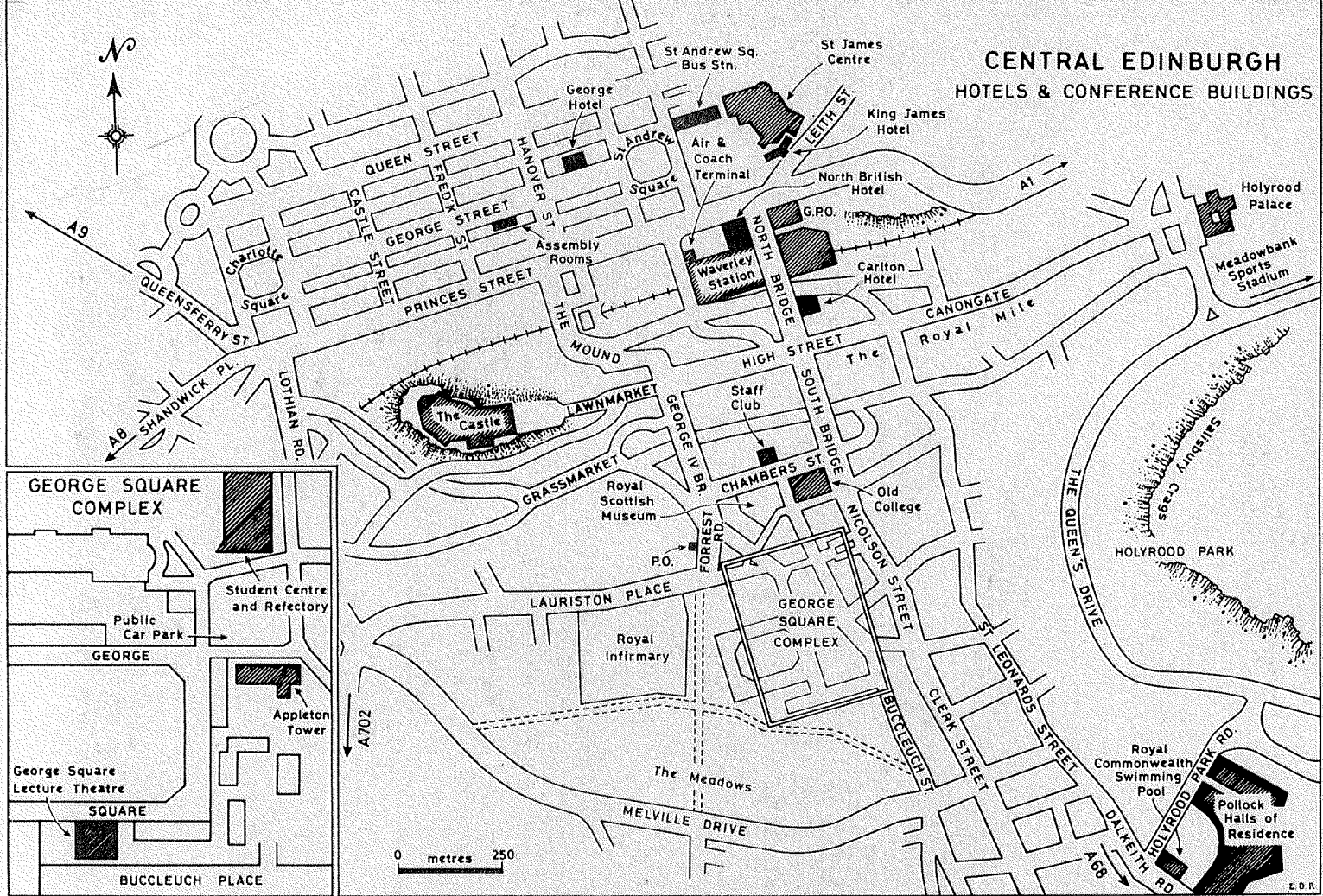
* Full Titles of Sessions given on page 14.

SUMMARY TIMETABLE

Sunday 10 July	Monday 11 July	Tuesday 12 July	Wednesday 13 July	Thursday 14 July	Friday 15 July
	0945 Opening Ceremony	0915 Plenary Lecture 2	0915 Plenary Lecture 3	0915 Symposium 2	0915 Plenary Lecture 4
	1015 Plenary Lecture 1	1015 Interval	1015 Interval	1015 Interval	0950 Plenary Lecture 5
	1130 Contributed Paper Sessions 1-3 (parallel)	1045 Panel Discussion 1	1045 Panel Discussion 2 in parallel with Contributed Paper Sessions 10-11	1045 Symposium 2 ctd followed by Panel Discussion	1030 Interval
	1245 Lunch	1230 General Assembly EEMS	1230 Lunch	1230 Lunch (Poster session manned during lunch break)	1100 Panel Discussion 3
	1330 Poster Session	1300 Lunch	1330-Onwards Official Excursions	1415 Contributed Paper Sessions 12-14 (parallel)	1215 Closing Ceremony
	<i>2nd Contact Mtg #7 Down</i>	1415 Contributed Paper Sessions 4-6 (parallel)		1530 Interval	
	1530 Symposium 1	1530 Interval		1600 Contributed Paper Sessions 15-17 (parallel)	
	1730 End of Symposium	1600 Contributed Paper Sessions 7-9 (parallel)		1800 End of Session	
		1800 End of Session		2000 Conference Dinner and Scottish Evening	
2000 Reception and Buffet Supper	2030 Civic Reception	<i>630 Preston Field house</i>			

Plenary Lectures, Symposia and Panel Discussions 1 and 3 in George Square Theatre.
Contributed Papers, Poster Sessions and Panel Discussion 2 in Appleton Tower.

CENTRAL EDINBURGH HOTELS & CONFERENCE BUILDINGS



E.D.R.