

## INTERNATIONAL SYMPOSIUM ON CONTEMPORARY PHYSICS

## PROGRAMME OF LECTURES \*

Biophysics

|               |                       |   |
|---------------|-----------------------|---|
| <u>7 June</u> | H.C. Longuet-Higgins: | Chemical bonds.                             |
|               | S. Brenner:           | Structure and replication of nucleic acids. |
| <u>8 June</u> | F.C. Crick:           | The genetic code.                           |
|               | A. Klug:              | Molecular self-assembly.                    |

Classical aspects of the theory of matter

|                |                   |   |
|----------------|-------------------|---|
| <u>10 June</u> | D. Pines:         | A survey of problems and methods in the quantum theory of condensed matter. |
|                | I.M. Khalatnikov: | Theory of Bose-Fermi quantum liquids.                                       |
|                | M. Fisher:        | Phase transitions and critical phenomena.                                   |
|                | P.C. Martin:      | Solid state problems for particle physicists.                               |

Quantum aspects of the theory of condensed matter(including nuclear matter)

|                       |   |
|-----------------------|---|
| H.C. Longuet-Higgins: | Towards a theory of temporal recall<br>(Biophysics).                                      |
| P.W. Anderson:        | Macroscopic coherence and superfluidity.  |
| R.A. Ferrell:         | Field theory of phase transitions.  |
| E.H. Lieb:            | Survey of the one-dimensional many-body problem and two-dimensional ferroelectric models. |
| P. de Gennes:         | On some applications of path integrals and diagrammatic methods to chemical physics.      |
| E. Montroll:          | Three examples of one-dimensional systems.  |

\* Talks without titles are those for which MSS have not yet been received or which will not appear in the Proceedings.

12 June J.R. Schrieffer: Microscopic theory of superconductivity.  
A.A. Abrikosov: Magnetic impurities in non-magnetic metals.  
H. Bethe: "From a life of physics".

13 June A. de-Shalit: The nuclear shell model.  
A. Bohr: Excitations in nuclei.  
G.M. Temmer: Nuclear excitations of special symmetry.

Elementary particle physics

14 June Abdus Salam: Fundamental theory of matter, a survey of results and methods.  
F. Low: Quantum electrodynamics.

Specialized topics in the theory of condensed matter and nuclear physics

S. Doniach:  
C. Pethick:  
H. Suhl: Localized magnetic moments in metals.  
P.A.M. Dirac: "From a life of physics" (Methods in theoretical physics).

15 June D.J. Thouless: Nuclear physics and the many-body problem.  
T.E.O. Ericson: Microstructure in nuclear spectra at high excitation.  
N. Rosenzweig: Distribution of energy level spacings and conservation laws.  
I. Mikhailov: Comments on the evaluation of the effective force for the nuclear RPA.  
J. Sawicki: Microscopic theory of effective operators of electromagnetic interactions in nuclei.

Low-energy, high-energy and particle physics

17 June

- M. Goldberger: The S-matrix.  
H. Feshbach: The S-matrix in nuclear physics.  
R.J. Eden: Relativistic S-matrix theory.  
L. Van Hove: High-energy collisions of hadrons.  
What are the dynamical mechanisms?  
S.J. Lindenbaum: Asymptotic energies.  
R. Omnès: Dynamics of strong interactions and the  
S-matrix.  
M. Toller: Families of Regge trajectories.  
G. Domokos: Life on the light cone.

18 June

- T.D. Lee:  
K. Nishijima: A model of CP violation.  
F. Low:  
H. Primakoff:  
B. Zumino: Phenomenological Lagrangians.  
G. Morpurgo:  
A.N. Mitra:  
V. Kadyshevsky:  
P. Budini: Wave equations for infinite component  
fields.  
A.O. Barut:  
I. Todorov: Spectral representations of the covariant  
two-point function and infinite-component  
field with arbitrary mass spectrum.  
W. Heisenberg: "From a life of physics".

19 June

- J.P. Elliott: Nuclear symmetries.  
Y. Ne'eman: Theory and application of arbitrary spin.  
F. Gürsey: SU(6) symmetry and its relativistic  
generalizations.

C. Fronsdal: Infinite multiplets in atomic and high-energy physics.  
R.H. Dalitz: Quarks, the hadronic sub-units.  
J. Schwinger: Theory of sources.

#### Astrophysics

20 June E.E. Salpeter: Introduction and topics in theoretical astronomy.  
W.A. Fowler: Solar neutrino astronomy.  
R. Kraft: Optical astronomy I. The peculiar A-type stars.  
E.M. Burbidge: Survey of current problems in extragalactic astronomy.  
F. Graham-Smith: The magnetic field of the galaxy.  
B. Rossi: Discrete extra-solar X-ray sources.

21 June F. Hoyle:  
R.F. Kraft: Stellar population and the evolution of the galaxy.  
B.F. Burke: Radio studies of galactic structure.  
F. Graham-Smith: Radio galaxies and quasars.

#### High-energy physics

22 June S. Fubini: Current algebra.  
S. Weinberg: From chiral dynamics to chiral algebra.

Panel on field theory and statistical mechanics

- R. Haag: Introductory remarks concerning quantum field theory.
- A. Jaffe: Progress in constructive field theory.
- D. Ruelle: Field theory and statistical mechanics.

Astrophysics

- 24 June L.V. Ginzburg: The origin of cosmic rays.
- P. Morrison: Diffuse radiation in the high-energy regions.

Panel on quasars

- F. Hoyle:
- M. Schmidt: Observed properties of quasi-stellar objects.

Panel on pulsars

- J.G. Bolton: Opening talk.
- A.G.W. Cameron: Attempts at optical detection of pulsars.
- M. Schmidt: Palomar observations of the star near CP 1919.
- T. Gold: Survey of present views on the nature of pulsars.
- F. Graham-Smith:
- L.V. Ginzburg: A few remarks on pulsars.
- I.M. Lifshitz: Landau's life of physics.

## Quantum and classical physics

25 June

C.H. Townes: Quantum optics or quantum electronics.  
E. Montroll:  
J. Keller: Survey of the theory of turbulence.

## Panel on the foundations of quantum mechanics

E.P. Wigner: Epistemology of quantum mechanics.  
J.M. Jauch: Foundations of quantum mechanics.  
D. Bohm: "Hidden variable" theories as a step towards a new language structure for physics.  
B. d'Espagnat: Remarks on the notion of classical systems.  
T. Bastin: The continuity problem: a way out?  
O. Klein: "From a life of physics".

## Plasma physics

26 June

M.N. Rosenbluth: Plasma physics: general survey.  
T. Dupree: Non-linear plasma physics.  
P.A.M. Dirac: The quantization of the gravitational field.  
J.W. Dungey: Observational data from satellites.  
W.B. Thompson: Controlled thermonuclear research.  
B. Coppi: Report on the problem of plasma confinement.

General relativity and cosmology

27 June

- V.A. Fock: Remarks on the general principles of Einstein's gravitation theory.
- R.H. Dicke: General relativity: survey and experimental tests.
- J. Weber: General relativity and experiments.

Panel on general relativity

- R. Penrose: On gravitational collapse.
- I.M. Lifschitz:
- S. Weinberg: Remarks on gravitational radiation.

Panel on cosmology

- R.K. Sachs:
- T. Gold:
- R.H. Dicke: Extemporaneous remarks on gravitation and cosmology.
- W. Thirring: Theoretical implication of the known facts about gravitation.
- D.W. Sciama: Recent developments in observational cosmology.
- E.M. Burbidge: Observational cosmology - optical wavelengths.

Statistical mechanics

28 June

- I. Prigogine: Quantum statistical mechanics systems with an infinite number of degrees of freedom.

Panel on general relativity

- S. Deser: Hamiltonian dynamics and positive energy in relativity.
- W. Thirring: