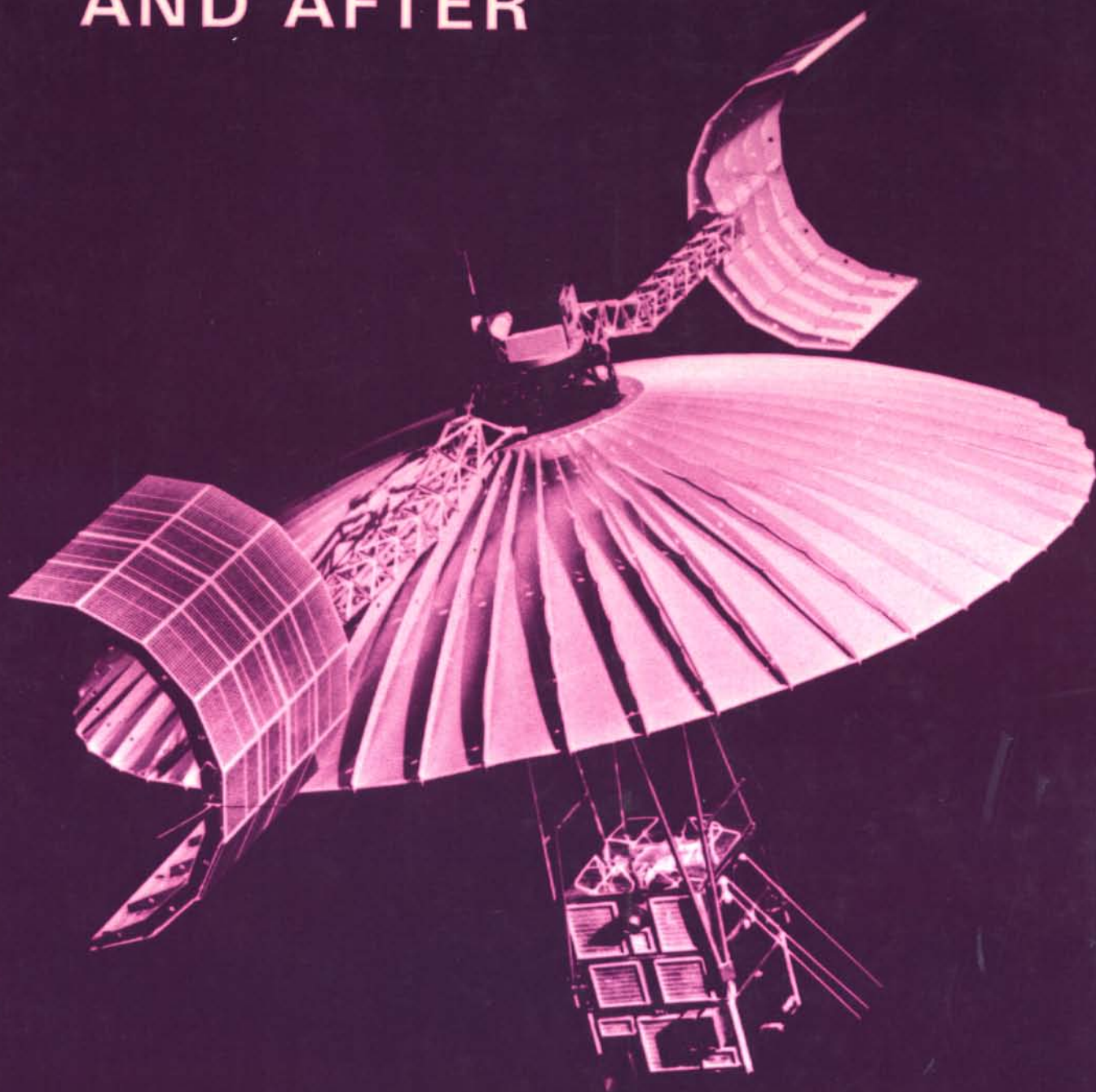


TELECOMMUNICATIONS IN THE 1980s AND AFTER

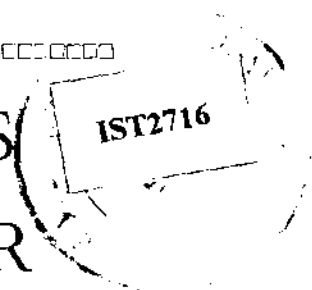


The Royal Society of London

TELECOMMUNICATIONS
IN THE 1980s AND AFTER

BIBLIOTHEQUE DU CERIST

TELECOMMUNICATIONS
IN THE 1980s AND AFTER



A ROYAL SOCIETY DISCUSSION
ORGANIZED BY
SIR JAMES LIGHTHILL, F.R.S., SIR ERIC EASTWOOD, F.R.S.,
C. A. MAY AND K. W. CATTERMOLÉ

HELD ON 10 AND 11 MARCH 1977

LONDON
THE ROYAL SOCIETY
1978

Printed in Great Britain for the Royal Society
at the
University Press, Cambridge

ISBN 0 85403 097 2

First published in *Philosophical Transactions of the Royal Society of London*,
series A, volume 286 (no. 1356), pages 1-228.



Published by the Royal Society
6 Carlton House Terrace, London SW1Y 5AG

PREFACE

The year 1976 marked the centenary of the invention of the telephone. Conferences, discussions and lectures were held in all parts of the world to mark the event. These generally tended to be historical and sociological reviews of the previous 100 years and emphasized the benefits the telephone had brought to mankind.

During the year the Royal Society sought contributions from eminent experts in half a dozen countries to a meeting at which the future pattern of telecommunications development would be discussed. This was held in March 1977.

The papers covered virtually all aspects of modern telecommunications, from microtechnology, on which much of the future success in circuit and system design depends, to strategic systems planning. The social aspects were not ignored: a paper was included on the implications of new telecommunications service and reference was made to the topical – and controversial – question of the future size of the telecommunications switching industry.

It is clear that there are few physical impediments to a further massive growth in telecommunications, tending to produce a major impact upon many other industries, and on society in general. The main uncertainties are those of human organization and of politics rather than of technology. Perhaps this in itself is the most fundamental change which has affected the art in the 100 years since its birth.

M. J. LIDTHILL
E. EASTWOOD
C. A. MAY
K. W. CATTERMOLE

CONTENTS

[Four plates]

	PAGE
PREFACE	v
SIR JAMES LIGHTHILL, F.R.S. Introductory remarks	3
SIR EDWARD FENNESSY The global picture	5
D. ELIAS The possible development of telecommunications and its effects on the telecommunications industry	19
K. G. CORFIELD Into the world of economic broad band systems	29
D. M. LEAKEY Current and medium term developments in switching	43
K. W. CATTERMOLE Long term developments in switching	65
<i>Discussion:</i> M. T. HILLS	76
R. W. KETCHLEDGE Electronic switching for trunk systems	79
D. H. ROBERTS Microtechnology	93
J. P. VOGEL AND P. ARIFON Rationalization for a better management of the radio frequency space allocated to radiocommunications between specified fixed points and mainly to point to point microwave links	103
<i>Discussion:</i> H. M. BARLOW	112
D. GAGLIARDI Digital coaxial cable systems	113
G. F. DAVIDSON Millimetric waveguide systems	123
<i>Discussion:</i> P. A. LINDSAY	134
W. A. GAMBLING AND D. N. PAYNE Optical fibre systems	135
<i>Discussion:</i> P. A. LINDSAY	150

	PAGE
J. F. TILLY Submarine systems	151
B. I. EDELSON AND R. C. DAVIS Satellite communications in the 1980s and after	159
A. A. L. REID New telecommunications services and their social implications	175
M. B. WILLIAMS International standards for telecommunications	185
G. B. THOMPSON On the relation between information technology and socio-economic systems	207
<i>Discussion:</i> E. D. R. SHEARMAN	212
L. R. F. HARRIS Strategic systems planning	213
K. W. GATTERMOLE Concluding remarks	227