

4S Society for Social Studies of Science

Fall 1976

Volume 1 Number 4

IN THIS ISSUE

4S: Progress and Prospects	
Editorial Directions	3
First Annual Meeting	5
Council Minutes	7
Councillor's Commentary	9
Membership Renewal	10
Reports on Recent Meetings	
Symposium on Quantitative Methods in History of Science	10
International Council for Science Policy Studies	12
Conference on Origins of Knowledge	13
Forthcoming Meetings	14
Teaching Programs	15
Research in Progress	16
In The Literature	
New Journals	18
A Book Review	19
Recent Publications	20
Dissertations: Recent and Forthcoming	24
Appointments	26

CALL FOR NEWS. Material for inclusion in the next issue of the 4S Newsletter should be sent by 1 November 1976, to the Managing Editor, Department of History and Sociology of Science, E. F. Smith Hall D6, University of Pennsylvania, Philadelphia, PA 19174, U.S.A. This is the only call for news that will be issued.

A Fact Sheet on the First Annual Meeting and a Reduced Subscription Offer to two journals are inserted after page 14.

4S Society for Social Studies of Science

President: Robert K. Merton

Secretary-Treasurer: Robert McGinnis

Council: Bernard Barber, Nicholas Mullins, Nelson Polsby, Derek
de Solla Price, Arnold Thackray

Senior Editor: Arnold Thackray

Managing Editor: Daryl Chubin

Editorial Advisors: Bernard Barber, Joseph Ben-David, Ruth Schwartz Cowan,
Diana Crane, Jerry Gaston, Michael Gibbons, Gerald Holton,
Camille Limoges, Peter Mathias, Ian Mitroff, Harold Orlans,
Nelson Polsby, Nathan Rosenberg, Harvey Sapolsky, Steven
Shapin, Merritt Roe Smith, John Ziman, Dorothy Zinberg,
Harriet Zuckerman

4S: PROGRESS AND PROSPECTS

Editorial Directions. Learned societies organize their business around the twin poles of meetings and publications. 4S is no exception. Its very conception took place in the sheltering ambience of a then-fugitive newsletter. The informal Committee charged with supervising the gestation period of 4S rightly saw meetings and publications as the Society's necessary nutrients. The Charter of the Society reflects these concerns. 4S was born at a meeting, in San Francisco, just twelve months ago. During the first year of its fledgling life, the twin issues of meetings and publications have continued to occupy the thoughts and energies of the officers, council, members and friends of the Society. The present issue of the Newsletter testifies to the progress made, most especially in the planning of our First Annual Meeting. It also raises the question of our future prospects.

The rapid early growth of the Society--to over four hundred members within a year--has delighted and astonished those who took part in anxious pre-natal discussions. However 4S is still a fledgling. As such it needs the wise guidance and support of all its members. With this thought in mind, a group of Editorial Advisors has now been created to assist in shaping the evolving direction of the Society's publications. The names, institutions and disciplinary affiliations of these Editorial Advisors are given below. Taken collectively, they represent not only the distinction and catholicity of the intellectual talent available to the Society, but also that extraordinary range of disciplinary concerns which has characterized 4S from its beginnings. Our Editorial Advisors are drawn not only from history or sociology departments, but also from political science, economics, programs devoted to 'histoire et sociopolitique des sciences' and cognate formulations, information science and from the natural sciences themselves. Among them, they represent 18 different institutions. Like the society of which they are a microcosm they represent both Europe and North America, both men and women, both mature authority and young aspiration. You are invited to make your concerns, suggestions and advice known to them as, together, we all seek to succor 4S and to ensure its healthy development.

One aspect of the Society's development must be the fostering of better communication among its members and between the disciplinary traditions they represent. That communication must consist not only of information, but also of perspectives. The Newsletter is a principal means of sharing both.

As regards information, the Newsletter will increasingly seek to carry full, fresh and reliable news of people, programs and publications. Its effectiveness depends greatly on your assistance. Information on appointments, promotions, job openings and program developments are correspondingly welcome. So too is information on your own and other publications in the social studies of science. Because the sharing of information among people trained in different disciplines is the goal, brief critical or expository annotation of bibliographical items is also most welcome.

As regards perspectives, the Newsletter will increasingly seek to facilitate dialog between and enriched understanding of those different methodological approaches, analytical techniques and disciplinary orientations within which our

4S: PROGRESS AND PROSPECTS (Continued)

Editorial Directions (Continued).

common research problems are--or should be--located. To that end, we shall seek to carry reports on research in progress, discussion of particular tools, techniques and data sets, and perspectives from particular disciplinary traditions (the first of which, by Nelson Polsby, appears in this issue).

The Publications Committee of the Society is also now at work, exploring the longer-range situation in accord with the Council mandate reported below. In this, as in the immediate development of the Newsletter, there are two aims. The first is to be a good neighbor to cognate journals in such fields as economic history, history of science, history of technology, philosophy of science, political science, science policy and sociology. The second is to find the proper forms through which 4S may, as President Merton has put it, "help to convert an impressive congeries of disparate programs of research on science into an even more impressive composite field of disciplined inquiry". Those forms must surely include both meetings and publications, as befits a fledgling but determined newcomer to the ranks of learned societies.

Arnold Thackray, Senior Editor

EDITORIAL ADVISORS

Bernard Barber
Joseph Ben-David
Ruth Schwartz Cowan
Diana Crane

Jerry Gaston
Michael Gibbons
Gerald Holton
Camille Limoges

Peter Mathias
Ian Mitroff
Harold Orlans

Nelson Polsby
Nathan Rosenberg
Harvey Sapolsky
Steven Shapin
Merritt Roe Smith
John Ziman
Dorothy Zinberg
Harriet Zuckerman

Sociology, Barnard
Sociology, Hebrew University, Jerusalem
History, SUNY (Stony Brook)
History and Sociology of Science,
Pennsylvania
Sociology, Southern Illinois
Liberal Studies in Science, Manchester
Physics and History of Science, Harvard
Histoire et Sociopolitique des Sciences,
Montréal
Economic History, Oxford
Information Science, Pittsburgh
National Academy of Public Administration,
Washington, D.C.
Political Science, Berkeley
Economics, Stanford
Political Science, MIT
Science Studies, Edinburgh
History, Ohio State
Physics, Bristol
Science and International Affairs, Harvard
Sociology, Columbia

4S: PROGRESS AND PROSPECTS (Continued)

First Annual Meeting. As previously announced, the First Annual Meeting of the Society will be at Cornell University, Ithaca, New York, on 4, 5, and 6 November 1976. Information about accommodation, room rates, and transportation is given on a separate fact sheet included in this issue. The program is as follows:

Thursday, 4 November

9:30 - Noon

Session I. DISCIPLINARY AND INTERDISCIPLINARY
PERSPECTIVES ON SOCIAL STUDIES OF
SCIENCE

Chairman: Derek de Solla Price (History of Science
and Medicine, Yale University)

Joseph Ben-David (Sociology, Hebrew University,
Jerusalem)

Jean-Jacques Salomon (O.E.C.D., Paris)

Arnold Thackray (History and Sociology of
Science, University of Pennsylvania)

Lunch

2:30 - 5:00

Session II. SOCIAL AND CULTURAL CONTEXTS OF SCIENCE

Chairman: Nathan Rosenberg (Economics, Stanford
University)

Yehuda Elkana
(Hebrew University,
Jerusalem)

"Images of Knowledge: Qualitative Indicators
and Science Policy"

John Law
(Keele University)

"Anomie and Normal Science"

Karin Knorr
(Institute for Advanced
Studies, Vienna)

"Policy-Makers' Use of Social Science
Knowledge: Symbolic or Instrumental?"

Stuart Blume
(Social Research Co-
ordinating Unit)

"Initiative-Taking in Research Policy:
Some Sociological Implications"

Dinner

7:30 - 10:00

Session III. THE STRUCTURAL CHARACTER OF SCIENCE

Chairman: Barbara G. Rosenkrantz (History of Science,
Harvard University)

Henry Small (Institute for
Scientific Information) &
Diana Crane (University of
Pennsylvania)

"Specialties and Disciplines in the Social
Sciences: A Preliminary Examination of the
Structure of Social Sciences Using the Social
Science Citation Index"

4S: PROGRESS AND PROSPECTS (Continued)

First Annual Meeting (Continued).

Nicholas Mullins,
Lowell Hargens
Pamela K. Hecht and
Edward L. Kick
(Indiana University)

"The Group Structures of Two Scientific
Specialties: A Comparative Study"

Belver Griffith
(Drexel University)

"Philadelphia Studies of the Structure of
Science"

Kenneth Studer (Cornell
University) &
Daryl Chubin (University of
Pennsylvania)

"The Heroic Age of Reproductive Endocrinology:
Its Development and Structure"

Friday, 5 November

9:30 - Noon

Session IV. COMPARATIVE SOCIAL ORGANIZATION OF SCIENCE

Chairman: Lewis Pyenson (Histoire et Sociopolitique
des Sciences, Université de Montréal)

Frank Andrews (University
of Michigan) &
Karin Knorr (Institute for
Advanced Studies, Vienna)

"The Comparative Study of the Organization
and Performance of Research Units: Nature
of the Study, Progress to Date, and Some
Preliminary Results"

Arnold Herzog
(Georgetown University)

"Social and Cognitive Factors Influencing
the International Transfer of Scientific
Knowledge"

Thomas Eisemon (McGill
University) &
Yakov M. Rabkin
(Université de
Montréal)

"Academic Engineers in Quebec: The Myth of
Linguistic Demarcation"

Sal P. Restivo (Rensselaer
Polytechnic Institute)

"Problems and Prospects in the Needham Paradigm
for Social Sciences of Chinese and Modern
Science"

Lunch

2:30 - 4:00

Business Meeting

6:00

Cocktails

7:00

Banquet - followed by Presidential Address

Introduction: Nelson Polsby (Political Science,
University of California,
Berkeley)

Address: Robert K. Merton (Sociology, Columbia
University)

"Toward The Historical Sociology of Scientific
Knowledge: The Evolution of a Research
Program"

4S: PROGRESS AND PROSPECTS (Continued)

First Annual Meeting (Continued).

Saturday, 6 November

Sessions Co-Sponsored by the Society for Social Studies of Science and the Research Committee on the Sociology of Science, International Sociological Association

9:30 - Noon

Session V. PROBLEMS IN THE SOCIAL STUDIES OF SCIENCE

Chairman: Merritt Roe Smith (History, Ohio State)

Maria Nowakowska (Polish Academy of Sciences)

"Informal Structures in Formal Organizations
(On an Example of Scientific Community)"

S. W. Woolgar (Brunel University)

"Problems and Possibilities of the Sociological Analysis of Scientific Accounts"

Bruno LaTour (The Salk Institute)

"Including Citation Counting in the System of Actions of Scientific Papers"

H. M. Collins (University of Bath)

"Upon the Replication of Scientific Findings:
A Discussion Illuminated by the Experiences of Researchers into Paraphychology"

Lunch

2:00 - 4:30

Session VI. PROBLEMS IN THE SOCIAL STUDIES OF SCIENCE

Chairman: Peter Weingart (Universität Bielefeld)

Invited Papers by

Gennady Dobrov (Kiev)

Alexander Szalai (Hungarian Academy of Sciences,
Budapest)

G. Kroeber (East Berlin)

Janos Farkas (Hungarian Academy of Sciences,
Budapest)

Council Minutes. The following is a summary of reports and resolutions of the fourth meeting of the 4S Council, held 24 August 1976 at Berkeley, California. Those in attendance were Robert Merton, Robert McGinnis, Bernard Barber, Nicholas Mullins, Nelson Polsby, and Arnold Thackray.

1. Elections. Results of the July election were announced:

President-elect	Warren O. Hagstrom (University of Wisconsin, Madison)
Elected to Council	Jerry Gaston (Southern Illinois University, Carbondale)
	Dorothy Nelkin (Cornell University)

All will serve two-year terms.

4S: PROGRESS AND PROSPECTS (Continued)

Council Minutes (Continued).

2. Publications. Council has received inquiries from several operating journals in cognate fields regarding possible affiliations with the Society. The Council members present agreed unanimously that the Society should plan for the establishment of a 4S journal in the near future. Council directed the Publications Committee (Arnold Thackray, Chairman) to explore and evaluate the feasibility of several publishing options, to conduct informal talks with various interested parties, and to report its recommendations to Council at its next meeting, so that specific proposals can be presented to the members of the Society at the Annual Meeting.

Nelson Polsby was appointed a member of the Publications Committee.

Offers of reduced subscriptions to Minerva and Social Studies of Science for members of 4S were noted and approved.

The list of Editorial Advisors to the 4S Newsletter was noted and approved.

3. First Annual Meeting. Plans for the meeting, which includes a joint conference with a section of the ISA, were reviewed and discussed at length.

Council extended a vote of thanks to Jerry Gaston and to the members of his Committee on Papers for their efforts.

Papers presented at the meeting will be reproduced, bound, and offered for sale during and after the Annual Meeting. A tentative price of \$10 was established. Any proceeds will be reserved for support of the Second Annual Meeting.

A registration fee of \$15 was established which will be reduced to \$10 for those who pre-register and \$5 for students.

4. Future Meetings. A standing Committee on Future Meetings was established with Nicholas Mullins as its initial chairman. Other members will be appointed. The charge to the committee is to devise plans for meeting sites for the next three years and, upon approval by Council, to select a local arrangements committee. The committee is also directed to give careful consideration to the possibility of holding meetings jointly with or adjacent to other societies with interests relevant to those of 4S and to make suitable recommendations to the Council.

5. Kaplan Memorial Award. Council agreed that, when offered, 4S would accept and administer a grant from the estate of the late Norman Kaplan. The grant would be in the form of an endowment providing an income for an annual award for the outstanding contribution to social studies of science during the preceding year.

6. Membership Size. The Secretary-Treasurer announced a 4S membership of 401 as of 20 August 1976.

7. Membership Renewal. It was agreed that all 4S memberships would become renewable as of 15 November 1976. Renewal notices will be handled by Neale Watson (Academic Publications). It was noted that all members, regardless of when they joined, will have received a full set of volume one of the 4S Newsletter.

4S: PROGRESS AND PROSPECTS (Continued)

Council Minutes (Continued).

8. Society Finances. A total income to date of \$4739.00 was reported. Substantial expenses have been incurred in preparation for the First Annual Meeting. A number of bills are presently outstanding in connection with the Newsletter. Council noted that additional secretarial costs of \$1625.00 have not been billed to the Society. The Secretary-Treasurer undertook to present a full statement of accounts at the next Council meeting.

The principle was stated and unanimously endorsed that the host institutions of the Secretariat and the Newsletter should underwrite these operations to the maximum feasible extent, and that Council members should themselves be responsible for all expenses incurred in travel to and accommodation at Council meetings, for the foreseeable future.
9. Council Size. In accord with the Charter and with appropriate notice, President Merton proposed to Council a revision in the statute concerning the size of the Council. It was therefore agreed to recommend to participants in the 4S Business Meeting in November that Council be increased from its present size of seven (including the President and Secretary-Treasurer) to nine. If approved at the Business Meeting, the motion would be put to the entire membership by mail ballot.
10. The next meeting of the Council was set for Wednesday, 3 November 1976, at Cornell University.

Councillor's Commentary. As indicated in the opening "Editorial Directions," the Newsletter will seek to promote dialog between and enriched understanding among the various disciplinary traditions represented in 4S, by means of "perspectives" contributed by members. The first such perspective comes from Council Member Nelson Polsby (Political Science, Berkeley):

Science is an extraordinary cultural artifact, arguably the most remarkable achievement for which human beings are collectively responsible. Insofar as this artifact is the product of choices, and these choices rely upon the agreement of authoritative collectivities and reflect the deployment of sizeable resources in the societies in which they are made, science can be regarded as at least in part a result of activity conventionally defined as political. In these very broad senses the interests of political scientists in the growth of knowledge intersect the interests of other students of science.

Of course in a narrower sense there is a special place for students of politics in social studies of science. The making of "science policy," the politics that surrounds the influence of scientists in policy-making, the organization of scientists for political action, the relations of intellectual and technological capacity to the array of political options in the world all ordinarily fall into the domain of political science. An interdisciplinary organization, however, can be expected to give short shrift

4S: PROGRESS AND PROSPECTS (Continued)

Councillor's Commentary (Continued).

to essentially vacuous territorial claims such as these. And that is undoubtedly its chief value. By focusing on problems and processes from a variety of perspectives, an interdisciplinary society reminds its scholar-members what the important issues are, and provides a fresh cognitive framework and reward structure for intellectual work.

Thus my agenda for the Society is simple and straightforward. I am looking for colleagues who can tell me what to read and what to avoid, who are themselves, for their own reasons, and in the light of their own traditions, engaged in studying the growth of knowledge in society. I expect there will be language barriers at first; transcending them is part of the challenge and the fun of being in at the start of an intellectual specialty.

Membership Renewal. With this copy of the Newsletter, you should possess a complete set of the 4 issues that constitute Volume 1 (Fall 1975, Winter, Spring, and Fall 1976). If you have not received any of the earlier issues, please contact the Managing Editor at the Department of History and Sociology of Science, University of Pennsylvania, E. F. Smith Hall D6, Philadelphia, PA 19174, specifying which number(s) you have not received.

Renewal forms will be sent out by and should be returned to Neale Watson Academic Publications, Inc. (156 Fifth Avenue, New York, NY 10010). Volume 2 Number 1 of the Newsletter (Winter 1976/77) will be mailed to all new and continuing members of the Society. That issue will contain a full report on the First Annual Meeting.

REPORTS ON RECENT MEETINGS

Symposium on Quantitative Methods in History of Science. The first International Symposium on Quantitative Methods in the History of Science, held at the University of California, Berkeley, from 25-27 August 1976, was attended by some 120 persons representing diverse disciplines concerned with measurement in the study of science. Professor Roger Hahn served as coordinator for the symposium, which was sponsored by the Office for History of Science and Technology and the Institute for International Studies, University of California, Berkeley. Given the variety of subjects presented in the twenty-four invited papers, the report below attempts a synoptic (if idiosyncratic) review of the methodological discussion which occurred, rather than reports of individual contributions.

Prosopography, citation and co-citation analysis, regression of time series data, science indicators and various modes of linguistic and textual analysis were among the distinct quantitative techniques whose applicability to the measurement of science was assessed in the papers presented. Since the bulk of quantitative work on science has taken place in the domain of bibliometrics, much of the discussion focussed upon the strengths and weaknesses of this analytical approach. Understandably, given the heterogeneous composition of the symposium, there was little

REPORTS ON RECENT MEETINGS (Continued)

Symposium on Quantitative Methods in History of Science (Continued).

consensus on either methodology or research priorities, save the rather bland conclusion that quantitative techniques are a useful tool for heuristic purposes in historical inquiry but do not provide better purchase upon historical reality than other methodologies.

The disparate currents of thought and lines of discussion at the sessions defy our attempts at neat and concise categorization. Several serious disagreements with existing traditions of "number crunching" in the study of science were voiced. The most vigorous discussion followed the presentation of a review of "Quantitative Measures of Communication in Science" by David O. Edge (Science Studies Unit, University of Edinburgh). Edge provided a detailed account of the tension he perceives between those analysts of science who, like Derek de Solla Price or Robert K. Merton and his students, tend to stress the autonomy and regularity of the social system of science, and those (mainly British) sociologists who, drawing on viewpoints in cultural anthropology and interpretive sociology, view science as a cultural product. Edge's remarks crystallized an aspect of debate which had been implicit in earlier sessions and which remained a prominent element in later discussions. Critics of those who proposed quantitative measures of science as a preferential mode of understanding the workings of the scientific community felt that the implicit assumptions behind such an approach undermined its validity. For example, citation and co-citation analysis in particular were criticized for problems in sampling techniques, the theories of interaction among scientists assumed by the method, and the tendency of citation maps to reify science by concentrating on its public products. The dissenters called instead for attention to the more elusive "private" conduct of scientists and the way in which continual negotiation of scientific consensus results in intellectual innovations and specialty development. These debates focussed primarily on sociology of science rather than history of science, and the relevance to historical investigation of this constellation of problems was never explicitly discussed.

A large fraction of the papers at the Symposium did address themselves to specific historical topics, e. g., traditions of measurement in the historiography of science, the role of women scientists in twentieth-century America, and American grassland ecology as a case-study in the life cycle of a professional research community. Many of the authors did employ quantitative techniques to deal with their respective topics. Collectively, these papers demonstrated that quantitative methods have several useful functions in history of science, the chief ones at this juncture being the mapping out of the nature of a research problem and revealing totally unexpected aspects of a research topic to the investigator.

In our opinion, the two papers which proved most provocative in relation to the theme of the Symposium were those by Lewis Pyenson (Université de Montréal) and Barbara Rosenkrantz (Harvard University). Pyenson reviewed work on prosopography of populations of scientists, then suggested that this technique affords a means of re-directing our attention from great men and elites to the life of the common scientist. Rosenkrantz' report of ongoing research into asylum records as a source for investigating the social history of mental illness in nineteenth-century America provided the best example at the Symposium of quantitative techniques marshalled in a sophisticated manner to address a set of substantive historical questions which could not be approached readily with other methods.

REPORTS ON RECENT MEETINGS (Continued)

Symposium on Quantitative Methods in History of Science (Continued).

A familiar theme from traditional canons of scholarship in the history of science surfaced in the dissatisfaction with quantitative work in the study of science expressed by Paul Forman (Smithsonian Institution) and others, namely that the use of these techniques leads to the "selling-out" of science as a special area of inquiry in favor of general social history. A radically different construction of the field emerged for instance, from the approaches suggested by Pyenson, Rosenkrantz, or Roy M. MacLeod (University of Sussex) in his paper on the Cambridge Natural Sciences Tripos and the education of Victorian elites. Karl Hufbauer (University of California, Irvine) suggested in a different vein that the role of scientists in significant historical events is the proper focus of study for historians of science, and that quantitative methods of investigation are justified only if they provide a better means of attacking the problems of historical explanation; thus, he could see little relevance for historians in the study of, for instance, reward systems or communication patterns in science.

Overall the papers at the symposium demonstrated that relatively little quantitative investigation has been undertaken by historians of science, and that such studies may well be difficult to execute. Ironically, historians with significant expertise in the application of quantitative methods to such fields as urban, economic, and social history were conspicuous by their absence. The Symposium did provide, however, a useful forum for the presentation of diverse viewpoints in the study of science past and present, although as an International Symposium on Quantitative Methods in the History of Science it was perhaps a bit premature. The promise of quantitative work in history of science remains largely unfulfilled at present, and the nature of discussions at the meeting pinpointed the still uneasy rapprochement between competing orthodoxies in this as yet inchoate field.

Nonetheless, by its very existence and surprisingly large attendance, the symposium demonstrated active interest in the quantitative study of science, and offers hope for a second such conference in the future.

P. Thomas Carroll, Jeffrey L. Sturchio, and Robert F. Bud
Department of History and Sociology of Science,
University of Pennsylvania

International Council For Science Policy Studies. The Second Formal Meeting of the General Committee of the ICSPS took place in Paris on 5-9 April 1976. Present were the officers--J.J. Salomon (President), S. Mikulinski, D. de Solla Price, and A. Rahman (Vice-Presidents), and I. Spiegel-Rösing (Secretary)--ten other members representing eight different countries, and a handful of guests. Eleven Affiliated Members were later unanimously elected by the General Committee.

The meeting was opened with a welcome address by R. Taton, President of the Division of History of the International Union for the History and Philosophy of Science (of which ICSPS is a section) and by Y. de Hemptinne, Director of

REPORTS ON RECENT MEETINGS (Continued)

International Council For Science Policy Studies (Continued).

The Division of Science and Technology Policies at Unesco. Three formal lectures were then delivered on the topic "Social, Cultural, and Political Influences on Science Policy Studies":

- R. MacLeod: Cultural, Social and Political Influences on Science Policy Studies in British Universities, 1966-76;
- E. Skolnikoff: An Analysis of the Varying Research Orientation of MIT's Science Policy Research;
- J. Farkas: The Effect of Cultural, Social and Political Factors on R&D, and Manufacture of M-type Lubricant Additives.

A lively discussion ensued from the lectures. The major controversies discussed were (i) the limitations of science policy studies by the exclusion of the management of industrialization; (ii) the internationality of science as something over and above its socio-political environment.

It was decided that the Third Formal Meeting of the General Committee would convene in mid- to late March 1977. The topic for discussion will be "Relevance of Science Policy Studies to Science Policy." In addition, reports will be given on science policy issues and the state of the art of science policy studies in the host country (Switzerland or Poland).

Derek Price reported on the Society for Social Studies of Science and invited membership in it. He was appointed liaison officer of the Council to this new society. J. Farkas was appointed in a similar capacity to the ISA Sociology of Science Research Committee, Roy MacLeod to PAREX, and Brigitte Schroeder-Gudehus to the International Political Science Association.

Conference on Origins of Knowledge. Papers presented at the Miami University conference on "Origins of Knowledge: The Relationship Between the Sciences and Humanities" (8-10 April 1976) are now available at cost from Britton Harwood, Department of English, Miami University, Oxford, OH 45056. The authors and their papers are:

- Brown, Stuart, "The Human Scientist's Dilemma: Its Roots in the Ideology of Inquiry";
- Curtis, James M., "Modern Epistemology and Modern Aesthetics";
- Feyerabend, Paul K., "Towards a Realistic Appraisal of Science";
- Gyr, John W., "The Subject-Relative Nature of Percepts and Concepts Used in the Sciences and the Humanities";
- Hooker, Clifford A., "The Integration of the Sciences and the Humanities from an Evolutionary Naturalistic Realistic Point of View";
- Searle, Leroy F., "Epistemological Mediation: A Proposal for Criticism Between Science and the Humanities."

FORTHCOMING MEETINGS

CHEIRON. The 9th Annual Meeting of CHEIRON: The International Society for the History of the Behavioral and Social Sciences will be held at the University of Colorado, Boulder, on 9-11 June 1977. Papers will be considered that deal with aspects of the history of any of the behavioral and social sciences or with related historical or social science methodology. The emphasis of the meeting will be interdisciplinary. Submit papers (20 minutes maximum) to Robert C. Davis, Department of Sociology, Case Western Reserve University, Cleveland, OH 44106. The deadline for abstracts is 15 November and for papers 31 December 1976. (Please enclose two copies and return postage.) Address inquiries about local arrangements to Michael Wertheimer, Department of Psychology, University of Colorado, Boulder, CO 80304. For information concerning membership, write to Elizabeth S. Goodman, 115 West Royal Drive, DeKalb, IL 60115.

History of Science Society. The HSS will hold its 1976 Annual Meeting jointly with the Society for the History of Technology (SHOT) in Philadelphia at the Holiday Inn-University City on 28-30 December 1976. The Program Committee Chairman is Alan E. Shapiro, School of Physics and Astronomy, University of Minnesota, Minneapolis, MN 55455. The Local Arrangements Committee is chaired by Robert E. Kohler, Jr., Department of History and Sociology of Science, University of Pennsylvania, Philadelphia, PA 19174.

Institute for Advanced Study. Clifford Geertz (Executive Officer of the School of Social Science at the Institute, Princeton, NJ 08540) reports that a number of sociologists of science will be in residence during the coming year, though under no particular organized program. Those who have been invited and accepted are Barry Barnes, Joseph Ben-David, Diana Crane, Gerard Lemaine, Frank Manuel, Nicholas Mullins, Jerome Ravetz, and Martin Trow.

Institute of Electrical and Electronics Engineers. The Education Group of the IEEE has organized a session on technological education and society for a conference to be held on 25 October 1976 in Tucson. For further information on the session, contact its chairman, Edwin C. Jones, Jr., Department of Electrical Engineering, Iowa State University, Ames, IA 50010.

Retrospective Technology Assessment. On 2-4 December 1976, Carnegie-Mellon University will sponsor a Conference in Retrospective Technology Assessment (RTA). The interdisciplinary conference will focus on the intended and unintended effects of technological innovation on the economic, political, physical, and social environments in America. Out of this examination should emerge guidelines for the development of a methodology for the assessment of present and future technology. Twelve papers will be delivered in four sections, one on methodologies for RTA, one on technology and values, and two sections on case studies. The keynote address will be given by Daniel DiSimone, Deputy Director of the Office for Technology Assessment. Joshua Menkes, Head of Exploratory Research for NSF will make a concluding statement to be followed by a panel discussion on the future of RTA. Further information can be obtained from Joel A. Tarr, Director of the Program in Technology and Humanities, Carnegie-Mellon University, Pittsburgh, PA 15213.

4S Society for Social Studies of Science

FIRST ANNUAL MEETING

FACT SHEET

Dates: Thursday, 4 November -- Saturday, 6 November 1976

Site: Statler Ballroom
Cornell University
Ithaca, New York

Accommodation: Ramada Inn
222 South Cayuga Street
Ithaca, New York 14850
607/272-1000

Room Rates: Single Occupancy -- \$16 per day
Double Occupancy -- \$20 per day

Reservations: If in response to the recent circular you expressed interest in attending the meeting, you will receive a room reservation card later this month. The card should be completed and sent direct to the Ramada Inn. Bus service will be provided between the Inn and the meeting site.

Travel

Arrangements: Ithaca can be reached by plane, bus, and private car. Air travel to Ithaca (Tompkins County Airport) is via Allegheny Airlines which also services Elmira (Chemung County Airport: 35 miles southwest), Binghamton (Broome County Airport: 45 miles southeast), and Syracuse (Hancock Airport: 55 miles north). American and United Airlines also fly into Syracuse. Because Allegheny has few departing flights on weekends, leaving Ithaca on Saturday afternoon or evening will be difficult. It is therefore recommended that you schedule a departing flight from Syracuse. There will be three flights available to New York City after 5:30 P.M. and one each to Boston, Philadelphia, Washington, D.C., and to Chicago (where connecting flights to Los Angeles and San Francisco can be arranged). Limousine service will be available from Ithaca to the Syracuse airport. Allegheny Airlines will alter its schedule on 31 October 1976. Please consult your local travel agent or call 800/448-2970 for information concerning incoming flights to Ithaca. Bus transportation is by Greyhound with connecting service to Trailways. Interstate 81 is within 35 miles and the New York Thruway is 50 miles away.

Further

Communications: Early in October you will receive a preregistration form and a card requesting your flight numbers and times of arrival and departure, if you are coming by air. This will allow the local arrangements secretary to schedule limousine service from your airport to and from Cornell at appropriate times.

Travel grants have been reserved for invited speakers and presenters of papers (one grant per paper). No additional travel funds are available. For North American presenters, food and lodging expenses will not be defrayed.

For

Information: Write to First Annual Meeting, SASS/Department of Sociology, Cornell University, 323 Uris Hall, Ithaca, NY 14853, or call 607/256-4801.

4S Society for Social Studies of Science

REDUCED SUBSCRIPTION OFFER

Both Minerva and Social Studies of Science are being offered at a reduced rate to members of 4S. Complete the order form(s) below and return to the address(es) given. Do not forget to enclose your payment.

(NAME)

(ADDRESS)

(CITY)

(STATE)

(ZIP)

Please enter my subscription to MINERVA:

	Individual	Society for Social Studies of Science members
One Year	\$14.00/ £5.00	\$10.00/ £3.65

Subscriptions may be paid by sterling or dollar cheque, money order or bank transfer to:

Subscription Department, MINERVA,
59 St. Martin's Lane, London WC2N 4SS

(NAME)

(ADDRESS)

(CITY)

(STATE)

(ZIP)

Please enter my subscription to SOCIAL STUDIES OF SCIENCE:

	Individual	Society for Social Studies of Science members
One Year	\$14.00	\$11.20
Two Year	\$27.00	\$21.60
Three Year	\$39.00	\$31.20

Individual Subscriptions MUST be prepaid by personal check or money order to:

SAGE Publications, Inc.,
P. O. Box 776/Beverly Hills, CA 90213

TEACHING PROGRAMS

SISCON: A Cooperative Project in Higher Education. Science in a Social Context--known as the SISCON project--is an attempt by a group of Universities and one Polytechnic working together to produce either alternatives or additives to the traditional first degree courses in science. In the past higher education in science has concentrated on educating highly skilled specialized professional scientists--graduates proficient in techniques, both theoretical and experimental, of a particular scientific discipline. Over recent years the capacity of the higher education institutions in the U.K. to produce science graduates has greatly increased while at the same time the employment prospects for such "professionals" appear to have decreased and still to be decreasing. While there will always be a need for such specialized scientists, the belief is growing that we should explore new patterns of science courses at first degree level. The SISCON project--involving Middlesex Polytechnic and the Universities of Aston, Edinburgh, Leeds, Leicester, Manchester, Stirling, Surrey and Sussex with some financial support from the Nuffield Foundation--is a joint program to introduce into degree courses in science an emphasis on the social aspects: sociological, economic, technological and ecological effects of science on our environment and also, of course, the effects and influences which society exerts on science. Each institution within SISCON is autonomous--there is no intention to impose a uniform pattern of course on all members--but all are working towards the same general objective, each in their own particular way. In some, the student follows a fairly conventional science course for part of the time and spends the remainder studying the social aspects of science. In others the courses have nothing in common with the traditional science courses offered in the same institutions, integrated with social considerations throughout. Further information about the SISCON project may be obtained from the Project Coordinator, W. F. Williams, Room 9/83, Physics/Administration Building, University of Leeds, Leeds LS2 9JT, U.K.

University of British Columbia. A Committee on Science and Technology Studies has been created at U.B.C. Membership in the group is open to all those professionally engaged in these studies--conventionally identified as history, philosophy, sociology of science or technology, science and culture studies, science policy studies, and so forth. It is open as well to all those interested in such studies, to practitioners of natural, social, and human sciences, their associated 'applied sciences' such as medicine and engineering.

The Committee will strengthen and promote Science and Technology Studies at U.B.C. and serve the University in the following ways:

- i. organizing workshops, lecture-series, and seminars to provide a forum for critical discussion;
- ii. acting as a coordinating centre, compiling a list of all faculty and students working in these fields, and publishing a listing of courses offered at U.B.C. and nearby institutions;
- iii. establishing and acting as a resource centre where members and participants can meet informally and materials can be stored;
- iv. preparing courses and study-units, consulting and advising on program content, in collaboration with faculty, departments, programs, and schools;

TEACHING PROGRAMS (Continued)

University of British Columbia (Continued).

- v. developing team-taught interdisciplinary courses of study; planning, should it prove desirable, an Institute of Science and Technology Studies; and
- vi. strengthening the University by making funding applications and proposals on behalf of members to support collaborative, scholarly research, some of which would be in response to local, regional, and national issues.

For details contact Stephen Straker, Department of History, or Robert Anderson, Faculty of Applied Science at the University of British Columbia, Vancouver 8, British Columbia, Canada.

RESEARCH IN PROGRESS

In a continuing effort to monitor social research on science and technology, the Newsletter presents brief summaries of selected projects currently supported by NSF. Future issues will highlight other projects supported by other agencies. Principal investigators are urged to help us extend our coverage by submitting information about their research.

Ackoff. "An Idealized Design of a National Scientific Communication and Technology Transfer System" continues Russell L. Ackoff's research on the Scientific Communication and Technology Transfer (SCATT) System. The current project will (i) update and improve its description and design through the extensive participation of SCATT System individuals and institutions; (ii) extend the design to accommodate operations of libraries, special information services, and publishers with viable plans for implementing the idealized system; and (iii) involve other countries in collaborative research and planning efforts leading to an international network of such systems. Ackoff can be reached at the Department of City and Regional Planning, University of Pennsylvania, Philadelphia, PA 19174.

Columbia. The Columbia University Program in the Sociology of Science features several projects conducted independently and collaboratively by Robert K. Merton, Harriet Zuckerman, Jonathan R. Cole, Stephen Cole (SUNY, Stony Brook), their graduate students and colleagues. Research in progress can be classified under five headings: Studies of the Growth of Scientific Knowledge, Studies of Cognitive Consensus in Science, The Accumulation of Advantage and Disadvantage in Science, Studies in the Evaluation System in Science, and Science and the Law. Some specific projects include: (i) historical case studies in the growth of knowledge, (ii) cognitive and social processes in scientific discovery, (iii) consensus, cognitive structures of specialties and quantitative analysis of research literature, (iv) the impact of affirmative action policy on academic and industrial science, (v) decision-making processes at the National Science Foundation, (vi) role performance and tenure decisions in academic science, (vii) problems in citation analysis: estimating the impact of an individual's contributions, and (viii) the DOSSIER Program for building archives of machine-retrievable biographical data on scientists. Direct inquiries concerning any of these projects to the Program on Sociology of Science, Columbia University, Fayerweather Hall, New York, NY 10027.

RESEARCH IN PROGRESS (Continued)

Hagstrom. Warren Hagstrom and his associates at Wisconsin continue their "Studies in the Sociology of Science." The research is divided into two general categories: "Stratification and Productivity in Science and The Sociology of Scientific Revolution and Disputes. Analyses of a data file on the inputs, structure, research outputs, student output, and prestige of 130 U.S. universities over a 20-year period have reached an advanced phase with an emphasis on departments as units of analysis. Differential research productivity and mobility of faculty and doctorates produced by departments in select disciplines constitute major foci. Similarly, interviews with elite participants in the revolutions and disputes under scrutiny--plate tectonics, quasars, archeology, biological taxonomy, social mobility, Bayesian statistics, and intuitionism in logic--are nearing completion. For more details, contact Hagstrom at the Department of Sociology, University of Wisconsin, Madison, WI 53706.

Machlup. The objective of Fritz Machlup's project on "The Production and Distribution of Scientific Information" is to develop data on the scientific and technical information industry as a whole. The major components of this industry, including authors, publishers, abstracting and indexing services, libraries, etc., will be covered. The basic hypothesis underlying the research is that book publishing, journal publishing, library services, and associated services are caught in a process of economic strangulation, with actions suggested or adopted to relieve any of these services tending to intensify the difficulties of the other industry services. The results of the project will appear in an update of Machlup's now-classic volume on The Production and Distribution of Knowledge in the United States. Contact him at the Department of Economics, New York University, New York, NY 10012.

Malin. Under a grant entitled "A Bibliometric Study of the Characteristics of the Review Literature," Morton V. Malin and the Institute for Scientific Information are examining the significance of review articles in the scientific communication process. Quantitative measures using citation data obtained from the Science Citation Index, Journal Citation Reports, and the Index to Scientific Reviews will be developed. Various analyses will then be conducted to measure citation rates to review articles as compared to other types of articles, e.g., experimental and theoretical. For more details, write Malin at ISI, 325 Chestnut Street, Philadelphia, PA 19106.

Smith. In "The Future Research Role of Universities," B. L. Smith of the Association of American Universities seeks to (i) examine the events and forces that have affected academic science over the past few years; (ii) assess the effects of these upon academic science; (iii) analyze the implications of developments to date, and those which may be reasonably anticipated, upon the future research role of universities; and (iv) reappraise the relationships between academic science and government, review patterns of support for academic science, and suggest guidelines appropriate for the future. Address inquiries to Smith at AAU, 1 DuPont Circle, Washington, DC 20036.

Stewart. D. E. Stewart's project on "Assessment of Technological Advances in Scientific and Technical Information Services" will focus on the impacts of such advances on users and producers of these services. The conclusions of this research should (i) provide policy guidelines for political, legal, economic, social, scientific, and technical actions on the production, capture, storage,

RESEARCH IN PROGRESS (Continued)

Stewart (Continued).

retrieval, formatting, publishing, dissemination, management, access and use aspects of information services; (ii) define areas of R&D which are needed to improve the transfer functions of information services; (iii) suggest methods of accentuating the positive and de-emphasizing the negative aspects of information services; and (iv) identify some institutional changes, e.g., in technical and legal standards for magnification and copyright. Further information can be obtained from Stewart at Electro Optimal Systems, Xerox Corporation, 3452 E. Foothill Blvd., Pasadena, CA 91107.

Stiglitz and David. "Analyses of Factors Affecting the R&D Choice of Firms" are being conducted by J.E. Stiglitz and P.A. David to formulate a more comprehensive economics approach for evaluating firm R&D choices in general, and in the natural resources area in particular. To be determined are how different relationships between R&D outputs and inputs in various technology area give rise to special appropriability problems and how these, in turn, may require the development of uniquely suited ways of organizing and compensating R&D teams, and may possibly affect market structure. The approach to these problems could be useful for identifying conditions where an inability to capture returns from R&D leads to resource misallocation. Address inquiries to the investigators at the Department of Economics, Stanford University, Palo Alto, CA 94305.

IN THE LITERATURE

New Journals.

A new series entitled Research in Sociology of Knowledge, Sciences and Art (An Annual Compilation of Research) will be published beginning late this year or early next by Johnson Associates, Inc., of Greenwich, CT. The series will contain previously unpublished essays in volumes of 300-350 pages. Manuscripts of varying lengths up to, and in special cases, surpassing 50 pages are invited for review. A page-weighted 10 percent royalty will be provided. Address submissions and inquiries to the series editor, Robert Alun Jones, Department of Sociology, University of Illinois, Urbana, IL 61801.

Science and Public Policy is a monthly journal containing news items, concise reports, comments, commissioned reviews, book reviews, and extensive bibliographies. This information is gathered through a world-wide network of 28 national correspondents. The journal is published by the Science Policy Foundation and edited by its Director, Maurice Goldsmith. For subscription and other information, write him at IPC: Science and Technology Press Ltd, IPC House, 32 High Street, Guildford, Surrey, England GU1 3EW. The U.S. address is IPC Inc., 205 East 42nd Street, New York, NY 10017.

IN THE LITERATURE (Continued)

A Book Review.

Francis Narin, Evaluative Bibliometrics: The Use of Publication and Citation Analysis in the Evaluation of Scientific Activity. Cherry Hill, N.J.: Computer Horizons Inc. (1976, 338pp).

This monograph is the culmination of five years of research by Francis Narin and a number of his associates at Computer Horizons Inc., most of it conducted under contract with the National Science Foundation. The currently available soft bound report will eventually, I am told, be published in book form.

The monograph begins with a review of what Narin calls "evaluative bibliometrics," a literature he distinguishes, somewhat spuriously I believe, from purely descriptive statistical studies of scientific literature. Nevertheless, the review provides a good introduction to the field. Particularly useful is an inventory of studies which have attempted in one way or another to correlate qualitative judgments of scientific activity with literature measures. Chapter VI is a discussion of procedural matters in publication and citation counting, and there is an interesting section on variations from field to field. Chapters VII through X are devoted to Narin and associates' own "influence methodology," a mathematical procedure for manipulating citation data in matrix form which supposedly results in measures of "quality" superior to crude citation or publication counts. Rounding out the volume is a 158 item bibliography, a glossary of terms, and appendices, the most extensive of which is a classified listing of journals covered by the Science Citation Index with their computed "influence measures." This list and the numerous journal citation maps should be of considerable interest to librarians.

The monograph's major thrust is the development of a procedure for the evaluation of scientific activity which is denoted by the term "influence methodology." We should be aware here of the very special approach which Narin is advocating. He states: "The influence methodology assumes that, although citations of papers vary within a given journal, aggregates of publications can be characterized by the influence measures of the journals in which they appear" (p. 183). What is sought, then, is a measure of journal quality which can be used to "weight" articles appearing in those journals. This obviates the need for an article citation count which is both tedious and expensive, and according to Narin, less satisfactory. The formulation of the influence methodology as an eigenvalue problem is very elegant and perhaps the major contribution of the book. Unfortunately, Narin does not offer a comparison of his influence measures for journals with Garfield's "impact factor" (as found, for example, in ISI's Journal Citation Reports) to see whether and how these measures differ. Nor is it clear that weighting articles by journal influence gives results that differ significantly from simple article citation counts.

IN THE LITERATURE (Continued)

A Book Review (Continued).

At a more fundamental level, we have the question of interpretation. What do all the numbers mean? Concern is almost exclusively procedural; few attempts are made to explicate the data; even the basic rationale for "evaluative bibliometrics" is taken for granted. We search in vain for possible connections with the history and sociology of science. The correlations of quality judgments with literature measures are taken as non-problematic. The case studies are on a macro-evaluation level (literature counts for large aggregates of scientists) and there is only superficial analysis of the intellectual and social factors at work.

There is no question that Narin and associates have made an important contribution to the methodology of publication and citation analysis, but they have not made a similar contribution to our understanding of the resulting data. There is an urgent need, it seems to me, for quantitative research which attempts to get behind the numbers.

Henry G. Small
Institute for Scientific Information

Recent Publications.

1. Aitken, Hugh G. J., Syntony and Spark. New York: Wiley-Interscience (1976, 348 pp, \$15.95, Science, Culture, and Society series).
2. Barnes, S. Barry and John Law, "Areas of ignorance in normal science." Sociological Review 24 (February 1976): 115-124.
3. Blanpied, William A. and Betsy Kwako (Eds.), Transdisciplinary Studies in Science and Values. AAAS Report No. 76-R-5 (A Collection of Papers) (1976, gratis, Director of Public Sector Programs, 1776 Massachusetts Avenue, NW, Washington, DC 20036).
4. Bloor, David, Knowledge and Social Imagery. (London: Routledge and Kegan Paul, 1976, paper £3.50).
5. Breiger, Ronald L., "Career attributes and network structure: a blockmodel study of a biomedical research specialty." American Sociological Review (February 1976): 117-135.
6. Brush, Stephen G., "Education of historians of science in the United States." Synthesis 3 (1975): 6-19.
7. Brush, Stephen G., "Can science come out of the laboratory now?" Bulletin of the Atomic Scientists 32 (April 1976): 40-43.
8. Cooper, Joseph D. and Herbert L. Ley (eds.), Ethical Safeguards in Research on Humans. Papers from a conference held April 1973. Washington, DC: Interdisciplinary Communication Associates (1976, 236 pp, paper \$9.00, Philosophy and Technology of Drug Assessment, Volume 5).

IN THE LITERATURE (Continued)

Recent Publications (Continued).

9. Cournand, Andre and Michael Meyer, "The Scientist's Code," Minerva 14 (Spring 1976): 79-96.
10. Cowan, Ruth Schwartz, "The industrial revolution in the home: a study in technology and social change." Technology and Culture 17 (January 1976): 1-23.
11. Crane, Diana, "Reward systems in art, science and religion." American Behavioral Scientist 19 (July-August 1976).
12. Crane, Diana, "Information needs and uses," Annual Review of Information Science and Technology 6 (1976), 1-39.
13. Crawford, Elisabeth and Norman Perry (Eds.), Demands For Social Knowledge. The Role of Research Organizations. London: Sage (1976, 265 pp, cloth \$6/\$14).
14. Crosland, M. (Ed.), The Emergence of Science in Western Europe. New York: Science History Publications (1976, 202 pp, \$18).
15. Crowley, Charles J. and Daryl E. Chubin, "The occupational structure of science: a log-linear analysis of the inter-sectoral mobility of American sociologists." The Sociological Quarterly 17 (Spring 1976): 197-217.
16. Diner, Steven J., "Department and discipline: the department of sociology at the University of Chicago, 1892-1920," Minerva 13 (1975): 514-553.
17. Farago, Peter, Science and the Media. New York: Oxford University Press (1976, 96 pp. \$8.75, Science and Engineering Policy Series).
18. Frankel, Eugene, "Corpuscular optics and the wave theory of light: The Science and politics of a revolution in physics," Social Studies of Science 6 (1976): 141-184.
19. Gay, Hannah, "Radicals and types: a critical comparison of the methodologies of Popper and Lakatos and their use in the reconstruction of some 19th century chemistry," Studies in History and Philosophy of Science 7 (1976): 1-51.
20. Gella, Aleksander (Ed.), The Intelligentsia and Intellectuals. Theory, Method, Case Study. London: SAGE (1976, cloth \$5/paper \$2.50).
21. Griffith, Belver, "Mapping the scientific literature." In A. Debons and W. J. Cameron, eds., Perspectives in Information Science. Leyden: Noordhoff (1975).
22. Grzycki, Rainald von, Prozesse wissenschaftlicher Differenzierung: zur Entstehung nationaler Fachgesellschaften im 19. Jahrhundert. Frankfurt: Athenäum Fischer Taschenbuch Verlag (1976).
23. Hargens, Lowell L., Barbara F. Reskin, and Paul Allison, "Problems in estimating measurement error from panel data: an example involving the measurement of scientific productivity." Sociological Methods and Research 4 (1976): 439-458.
24. Hindle, Brooke (Ed.), Early American Science. New York: Science History Publications (1976, 214 pp, cloth \$7.95/paper \$4.95, History of Science Selections from Isis).

IN THE LITERATURE (Continued)

Recent Publications (Continued).

25. Hutchinson, Eric, "The origins of the University Grants Committee," Minerva 13 (1975): 583-620.
26. Kohlstedt, S.G., The Formation of the American Scientific Community. Urbana: University of Illinois Press (1976, 264 pp, \$10.95).
27. Kuhn, Thomas S., "Mathematical vs. experimental traditions in the development of physical science," J. Interdisc. History 7 (Summer 1976): 1-31.
28. Lakatos, Imre, "Understanding Toulmin," Minerva 14 (Spring 1976): 126-143.
29. Lyons, Gene M., "Science and politics: United States of America," International Social Science Journal 28 (1976): 26-37.
30. MacRae, Duncan, Jr., The Social Function of Social Science. New Haven: Yale University Press (1976, 352 pp, \$15.00).
31. Merton, Robert K., Sociological Ambivalence and Other Essays. New York: Free Press (1976; includes papers on the ambivalence of scientists and of physicians).
32. Merton, Robert K., "Sociology of social problems." In Robert K. Merton and Robert Nisbet (eds.), Contemporary Social Problems, 4th Edition. New York: Harcourt, Brace (1976; includes sections on value-free sociology: unmuddling a muddle; theory shifts and problem shifts; theoretical pluralism).
33. Merton, Robert K., "The uses of institutionalized altruism." Seminar Reports, Columbia University, Volume 3 (1976): 105-117.
34. Moravcsik, Michael J., "Phenomenology and models of the growth of science," Research Policy 4 (1975): 80-86.
35. Nelkin, Dorothy, "The science-textbook controversies," Scientific American 234 (April 1976): 33-39.
36. Orlans, Harold, "The advocacy of social science in Europe and America," Minerva 14 (Spring 1976): 6-32.
37. Pfetsch, Frank (Ed.), Innovationsforschung als multidisziplinäre Aufgabe: Beiträge zur Theorie und Wirklichkeit von Innovationen in 19. Jahrhundert. Göttinger: Vandenhoeck & Ruprecht (1975).
38. PAREX, Academic Guide to Courses in Science Studies: France and United Kingdom (1975, Project PAREX, Maison des Sciences de l'Homme, 54 Raspail, Paris 75006 France).
39. Rabkin, Yakov M., "'Naukovedenie': the study of scientific research in the Soviet Union," Minerva 14 (Spring 1976): 61-78.
40. Reingold, Nathan (Ed.), Science in America Since 1820. New York: Science History Publications (Neale Watson) (1976, 334 pp, cloth \$8.95/paper \$5.95, History of Science Selections from Isis).

IN THE LITERATURE (Continued)

Recent Publications (Continued).

41. Reingold, Nathan, "Reflections on 200 years of science in the United States," Nature 262 (1 July 1976): 9-13.
42. Reskin, Barbara F., "Sex differences in status attainment in science: the case of the postdoctoral fellowship." American Sociological Review 41 (August 1976): 597-612.
43. Richter, Maurice, "Chinese science policy: a comparative analysis." Bulletin of the Atomic Scientists 32 (March 1976): 13-18.
44. Robinson, Daniel, An Intellectual History of Psychology. New York: Macmillan (1976, 434 pp, \$13.95).
45. Rosenberg, Nathan, Perspectives in Technology. Cambridge University Press (1976).
46. Sapolsky, Harvey, "Science policy." In Fred I. Greenstein and Nelson W. Polsky (Eds.), The Handbook of Political Science. Reading, Mass.: Addison-Wesley (1975, 8 volumes).
47. Scientific Manpower Commission, Salaries of Scientists, Engineers and Technicians - A Summary of Salary Surveys, Seventh Edition. Washington, D.C. (1975, 106 pp, 139 tables and charts, \$15.00).
48. Shils, Edward, "A great citizen of the Republic of Science: Michael Polanyi, 1892-1976," Minerva 14 (Spring 1976): 1-5.
49. Solomon, Susan Gross, "Controversy in social science: Soviet rural studies in the 1920's," Minerva 13 (1975): 554-582.
50. Thackray, Arnold, "Scientific networks in the age of the American Revolution," Nature 262 (1976): 20-24.
51. Tidball, M. Elizabeth and Vera Kistiakowsky, "Baccalaureate origins of American scientists and scholars," Science 193 (20 August 1976): 646-652.
52. Useem, Michael, "Government influence on the social science paradigm." The Sociological Quarterly 17 (Spring 1976): 146-161.
53. Useem, Michael, "State production of social knowledge: patterns in government financing of academic social research." American Sociological Review 41 (August 1976): 613-629.
54. Weart, Spencer, "The rise of 'prostituted' physics," Nature 262 (1 July 1976): 13-17.
55. York, Herbert, The Advisors: Oppenheimer, Teller and the Super-Bomb. San Francisco: W. H. Freeman (1976, 176 pp, \$6.95).
56. Ziman, John, The Force of Knowledge. The Scientific Dimension of Society. New York: Cambridge University Press (1976, 374 pp, \$15.95).

DISSERTATIONS: RECENT AND FORTHCOMING

- Allison, Paul, "Processes of Stratification in Science." University of Wisconsin, Madison (advisor: W.O. Hagstrom).
- Barton, Ruth, "The X Club: Science, Religion and Social Change in Victorian England." University of Pennsylvania (advisor: A. Thackray)
- Baxter, Paul, "The Evangelicals and Science in Scotland, 1800-1860." Edinburgh University (advisor: S.A. Shapin).
- Bentley, R., "Innovation in the GDR and the Role of the Academy of Sciences." University of Sussex (advisor: K.L.R. Pravitt).
- Collins, H.M., "Comparative Study of Communication in Science and Other Fields." University of Bath (advisor: S.F. Cotgrove).
- Day, R., "Fission and Fusion Nuclear Reactors: A Study of the Environmental and Social Effects of a Technology." University of Sussex (advisor: P.K. Marstrand).
- Dean, Colin, "The Social and Technical Development of Specialties in Modern Astronomy, with Special Reference to X-ray Astronomy." Edinburgh University (advisor: D.O. Edge).
- Dean, Genevieve, "Technological Development in the People's Republic of China: The Implementation of Technology Policy in Chinese Industry." University of Sussex (advisor: C.H.G. Oldham).
- Enoch, R.M., "Small Countries, International Cooperation and the Role of Science and Technology." University of Sussex (advisors: C. Freeman and R.M. MacLeod).
- Fears, Michael, "Sociology of Scientific Knowledge with Special Reference to Psychiatry in Nineteenth Century Britain." Edinburgh University (advisors: S.B. Barnes and S.A. Shapin).
- Gilbert, G. N., "The Development of Science and Scientific Knowledge." University of Cambridge (advisor: M.J. Mulkay).
- Gustin, Bernard H., "The Emergence of the German Chemical Profession, 1790-1867." University of Chicago (advisors: E. Shils, J. Ben-David, and T.M. Clark).
- Hart, David, "The Big Dam: A Social, Economic and Technical Analysis." University of Edinburgh (advisors: H. Dickinson and D.O. Edge).
- Heffner, Alan G., "Patterns of Collaboration in Scholarly Publications: Recognition, Deference and Exploitation." Purdue University (advisor: W. Hirsch).
- Lever, B.G., "Planning Technological Change: A Case Study of R&D Planning in the Agrochemicals Industry." University of Sussex (advisor: C. Freeman).

DISSERTATIONS (Continued)

- Lowe, P.D., "The Early History of Ecology and Conservation in Brittain." University of Sussex (advisors: P.K. Marstrand and R.M. MacLeod).
- MacKenzie, Donald, "Growth and Differentiation of Statistical Science." University of Edinburgh (advisor: S.B. Barnes)
- MacLeod, E. Kay, "The Fifth Estate: The History of the Association of Scientific Workers, 1917-1939." University of Sussex (advisor: C. Freeman).
- Malley, Marjorie, "From Hypophosphorescence to Nuclear Decay: A History of the Early Years of Radioactivity, 1896-1914." University of California, Berkeley (advisor: J.L. Heilbron).
- Moseley, Russell, "Science, Government and Industrial Research: The Origins and Development of the National Physical Laboratory, 1900-1975." University of Sussex.
- Newman, David, "Agricultural Waste Products as Industrial Inputs in Third World Countries." University of Edinburgh (advisors: H. Dickinson and D.O. Edge).
- Novitski, Mary, "Auguste Laurent: His Influence on the Emergence of the Concept of Valence." University of California, Berkeley (advisor: R. Hahn).
- Rugen, Helen, "The Role of Science in Ideas about Female Sexuality, 1900-1920." University of Edinburgh (advisors: J. Hurstfield and D.O. Edge).
- Sopka, Katherine, "Quantum Physics in America, 1920-1935." Harvard University (advisor: G. Holton).
- Thomas, G.H., "British Foreign Policy Towards Scientific and Technological Collaboration with Europe, 1964-1970." University of Sussex (advisor: K.L.R. Pavitt).
- Travis, G.D.L., "The Sociology of Scientific Discovery: With Particular Reference to Cognitive and Technical Norms." University of Bath (advisors: H.M. Collins and S.F. Cotgrove).
- Winnington, Terry, "Some Aspects of the Technological Requirements of Mexican Ejidos." University of Edinburgh (advisors: H. Dickinson and D.O. Edge).
- Woolgar, S.W., "The Development of Scientific Specialties, with Special Reference to the Growth of Pulsar Research." University of Cambridge (advisor: M.J. Mulkey).
- Wright, Susan, "Henri Poincare, Philosophical and Scientific Thought." Harvard University (advisor: G. Holton).

APPOINTMENTS

Ruth Barton	Lecturer, Social Sciences Division, Western Australian Institute of Technology
Maxine Berg	Visiting Assistant Professor, Department of History and Sociology of Science, University of Pennsylvania
William A. Blanpied	Director, Ethical and Human Values Implications of Science and Technology, National Science Foundation
Herbert L. Costner	Division Director for Social Sciences, National Science Foundation
Alexander J. Morin	Head, Office of Science and Society, Director for Science Education, National Science Foundation
Shirley A. Roe	Assistant Professor, Department of the History of Science, Harvard University
George W. Tressel	Public Understanding of Science Officer, Office of Science and Society, Director for Science Education, National Science Foundation

FORTHCOMING ATTRACTIONS

- *** REPORTS ON THE FIRST ANNUAL MEETING
- *** ABSTRACTS OF PAPERS PRESENTED
- *** COUNCILLOR'S COMMENTARY: DEREK de SOLLA PRICE
- *** CITATION ANALYSIS: OP-ED
- *** A REVIEW SYMPOSIUM
- *** CRITICAL BIBLIOGRAPHY

4S Society for Social Studies of Science

The 4S Newsletter is published four times each year and sent to all members of the Society for Social Studies of Science. Inquiries about institutional subscriptions should be addressed to the Managing Editor, Department of History and Sociology of Science, E. F. Smith Hall D6, University of Pennsylvania, Philadelphia, PA 19174, U.S.A.

Production assistants: Elizabeth Cooper, Sylvia Dreyfuss



Department of History and
Sociology of Science
University of Pennsylvania
Edgar Fahs Smith Hall/D6
Philadelphia, PA 19174

Non-Profit Org.
U.S. Postage
PAID
Permit No. 214
Philadelphia, PA
Third Class Mail