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UNIVERSITY OF CAMBRIDGE

DEPARTMENT OF APPLIED ECONOMICS

ELEVENTH REPORT
ACTIVITIES IN THE PERIOD
OCTOBER 1970 TO SEPTEMBER 1971



April 1972



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Director
W.A.H.GODLEY

Committee of Management, September 1971

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Miss P.M.DEANE	C.T.TAYLOR
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M.P.WARD

Secretary
H.LOSHAK

Dr C.H.FEINSTEIN, Professor N.KALDOR, and Mr H.H.LIESNER were also members of the Committee of Management during part of the period under review.

CONTENTS

	<i>page</i>
Section I RESEARCH ACTIVITIES	4
(a) <i>Economics and Economic History</i>	
Growth and Fluctuations in the British Economy: Projections for Planning	4
Financial Aspects of British Economic Growth	5
The Growth of Public Companies and its Finance	5
Current Economic Assessments	5
Economic Effects of Selective Employment Tax	5
Productivity in Distribution	6
International Freight Transport and Shipping Conferences	6
Influence of British Government Policies on Economic Development in the Regions	7
Economic Impact of the British Patent System	7
The Financial Structure in Operation	7
Comparative Structure and Scale	7
Production Conditions in Indian Agriculture	8
Optimal Planning in the U.S.S.R.	8
The Role of Private and Public Investment in the Economic Development of Developing Countries	8
National Income Statistics	9
Effects of Economic Policy	9
A Quantitative Model of the Educational System	10
Differentiation and Structural Change in Peasant Agriculture	10
Development of Improved Methods of Teaching Mathematics to Economists	10
(b) <i>Industrial Relations and Sociology</i>	
Management Organization and Industrial Relations	11
Labour Problems in Underdeveloped Countries	12
Job Evaluation	12
Wage Determination and Wage Drift in the Construction Industry	12
Labour Relations in Mining	12
Cost-Benefit Returns of Manpower Recruitment Systems in the Steel Industry	12
Prices and Incomes Policy	13
Life-time Earnings Patterns	13
Variations in Trade Union Organization among White-collar Workers	13
Social Status in Great Britain	13
Social and Industrial Determinants of Workers' Attitudes	13
(c) <i>New Research Projects</i>	14
II PUBLICATIONS	
Monograph Series	14
Occasional Papers	14
A Programme for Growth	14
Cambridge Studies in Sociology	15
Cambridge Papers in Sociology	15
Reprint Series	15
III OTHER ACTIVITIES	
Seminars	16
University Relationships	16
Relationships with Other Bodies	17
Visitors	17
IV FINANCE	17
V STAFF	
Research Staff	17
Assistant Staff	19

ELEVENTH REPORT OF THE DEPARTMENT OF APPLIED ECONOMICS

(covering the year October 1970 to September 1971)

I. Research Activities

1. This section outlines the work done in 1970-71 on the thirty research projects being conducted, and lists the four new ones which start in the current academic year.

(A) ECONOMICS AND ECONOMIC HISTORY

GROWTH AND FLUCTUATIONS IN THE BRITISH ECONOMY: PROJECTIONS FOR PLANNING

2. This project is under the direction of Professor Stone. The main results of the research are published in the series *A Programme for Growth* (London, Chapman and Hall) in which ten volumes have appeared, the latest being *The Determinants of Britain's Visible Imports 1949-1966*, by Terence Barker.

3. The research staff working with Professor Stone during the period covered by this Report were as follows: Mr T.S.Barker, Mr M.A.King, Mr C.S.Leicester, Dr D.A.Livesey, Dr L.J.Slater, Mr J.D.Sugden, and Mr V.H.Woodward. Mr Sugden worked part-time on the project. Also closely associated with the project are Dr K.J.Wigley and Mr A.G.Armstrong. Visitors to the project during the year included Dr K.Polenske, Mr S.Adamec, and Dr V.Santoro.

4. The main research of the project is the development of a medium term model of the British economy distinguishing thirty-five industrial sectors. During the year this model was used to project the economy in 1975 under a variety of assumptions about the growth rate, the tax system, and levels of investment. The model has been extended to handle explicitly the major indirect taxes as well as to incorporate relationships between the growth in employment, capital stock, and industrial output (referred to in the Tenth Report).

5. Work on a year-to-year model of the economy continued with the development of investment functions taking account of the effect of corporate taxation and capital allowances.

6. The disaggregated data used as the basis of the work was revised in view of the final 1963 input-output tables. A 70-sector input-output table for 1954 comparable with that for 1963 was estimated by V.H.Woodward at the request of the Central Statistical Office.

7. Two papers were given by members of the project to the Fifth International Conference on Input-Output Techniques held in Geneva, January 1971: 'Imports in multisectoral models' by T.S.Barker and 'Control theory and input-output analysis' by D.A.Livesey.

8. The following articles by members of the project were published during the year 1970-71: 'Public Expenditure and the Public', by T.S.Barker and J.R.C.Lecomber (*Moorgate and Wall Street Review*, November 1970).

'Public Expenditure and Models of the British Economy', by T.S.Barker (*Command Papers on Public Expenditure*, H.M.S.O., London, 1970).

'Effective Rates of Protection for United Kingdom Production', by T.S.Barker and S.S.Han (*The Economic Journal*, Vol. 81, June 1971).

'A Maximum Sustainable Growth Rate for British Industrial Outputs', by T.S.Barker (*Review of Economic Studies*, July 1971).

'Future Manpower Requirements of the British Economy', by C.S.Leicester (*Models of Manpower Systems*, English Universities Press, London, 1970).

'Optimising Short-term Economic Policy', by D.A.Livesey (*The Economic Journal*, Vol. 81, September 1971).

'Corporate Taxation and Dividend Behaviour - a Comment', by M.A.King (*Review of Economic Studies*, Vol xxxviii(1), January 1971).

'R.A.S. Projections when two or more complete matrices are known', by J.R.C.Lecomber (*Economics of Planning*, Vol. 9, No. 3, 1969 - published 1971).

FINANCIAL ASPECTS OF BRITISH ECONOMIC GROWTH

9. The research staff engaged on the project were Mr A.S.Deaton, Mr J.Moyle (retired September 1971), Mr A.R.Roe, and Mr F.E.Townson (retired September 1971).

10. During the year the main activity was the handing over of our statistical working papers to a team of statisticians from the Central Statistical Office and the Bank of England. It is expected that the work on the compilation of sector balance-sheets will now be continued by these two official bodies.

11. The work on the 1970 survey of holders of quoted ordinary shares was completed during the year and the results are to be published shortly.

12. Mr Deaton did extensive work on the underlying theory and estimation of consumers expenditure systems. This work is now being integrated into the project, *Growth and Fluctuations in the British Economy*.

13. Mr Roe continued to do research on the factors affecting certain balance-sheet quantities and ratios, notably in relation to the personal sector. He also continued the examination of the possible analytical uses of the full framework of national balance-sheets and financial transactions.

14. A paper by A.R.Roe entitled 'The Enforcement of the Balance-Sheet Identity in Financial Analysis' was presented at the Fifth International Input-Output Conference in Geneva in January 1971.

15. Publications by members of the project during the year include:

'Econometric Models for the Personal Sector', by A.S.Deaton and K.J.Wigley (*Bulletin of the Oxford University Institute of Economics and Statistics*, May 1971)

'National Balance-Sheet and National Accounting', by Jack Revell and Alan R.Roe (*Economic Trends*, May 1971).

'The Financial Interdependence of the Economy 1957-1966', by Alan R.Roe (No. 11 in *A Programme for Growth*, edited by Richard Stone, October 1971).

The Pattern of Ordinary Share Ownership 1957-1970, by John Moyle (to be published in December 1971 as an Occasional Paper).

THE GROWTH OF PUBLIC COMPANIES AND ITS FINANCE

16. The aims and inception of this project were described in earlier Reports. During the academic year 1970-71, the following two major publications of the project were completed:

Take-overs: Their Relevance to the Stock Market and the Theory of the Firm, by Ajit Singh (D.A.E. Monograph No. 19). (To be published in January 1972.)

The Prediction of Profitability and Other Studies of Company Behaviour, by Geoffrey Whittington (D.A.E. Occasional Paper No. 22). (Published December 1971.)

The following paper appeared in *The Review of Economic Studies*, Vol. xxxviii(1), January 1971: 'A Note on Corporate Taxation and Dividend Behaviour' by G.Whittington.

CURRENT ECONOMIC ASSESSMENTS

17. The London and Cambridge Economic Bulletin continued to be published quarterly during 1970-71 in *The Times Business News*. The Bulletin is concerned mainly with the current economic situation in the United Kingdom, but it is usual for one issue each year to be devoted to the economic situation in other countries. In 1970-71 the July issue gave an assessment of the current economic situation in Western Germany.

18. The number of regular subscriptions for the reprint of the Bulletin was well maintained in 1970-71. Miss S.D.Seal was in charge of the subscription list. Statistical, secretarial, and clerical services were provided by the Department. Mr C.H.Fletcher resigned as Statistician at the end of September 1971 and is being replaced by Mr R.F.Harris. Mrs T.Liesner remained as Secretary throughout the year.

ECONOMIC EFFECTS OF THE SELECTIVE EMPLOYMENT TAX

19. As explained in last year's Report, the results of the investigation of the distributive trades were published by H.M.S.O. in March 1970 under the title *The Effects of the Selective Employment*

Tax: First Report, the Distributive Trades, by W.B.Reddaway. Work on the collection of statistics for a Second Report on near-distribution was approaching completion at the time of the general election, and preliminary discussions with the Ministry of Public Buildings and Works were in train, dealing with information which they had, and aiming at a Third Report on construction.

20. With the advent of a Conservative Government, pledged to abolish the Selective Employment Tax, the Treasury explained that financial support for the investigation would cease in September 1971, when the staff engaged for it came to the end of their contracts. The objective therefore was changed to producing one Final Report dealing with near-distribution and such general conclusions about the S.E.T. field as a whole as could be reached from available data.

21. The statistical problems proved even more formidable in the field outside distribution than they were in that sector, and the part of the Final Report dealing with construction will be primarily an exposition of the deficiencies in the official statistics. It seems likely, however, that the Final Report will be completed in 1971-72. It should be of some interest, though not as exciting as the First Report.

22. In May 1971 *The National Institute Review* published an article commenting on the First Report's assessment of the effects of S.E.T. on productivity in the distributive trades. In consequence the August issue of that Review published an article, 'The Productivity Effects of Selective Employment Tax - A Reply by W.B.Reddaway'.

23. The research workers engaged wholly or partly on the project during the academic year 1970-71 were: Mr P.M.Croxford, Mr A.H.M.Fels, Mr C.H.Fletcher, Mr D.R.Glynn, Mr D.E.Moggridge, Mr J.S.O'Donnell, Professor W.B.Reddaway, and Mr J.D.Sugden.

PRODUCTIVITY IN DISTRIBUTION

24. Earlier work on this project was described in previous Reports. Currently the aims are to analyse changes in the structure and performance of the retail trade and to examine recent developments in the distribution of consumer goods.

25. Details of the latter part of the study were contained in the Tenth Report. Interviews were held during the past academic year with a number of companies engaged in the manufacture of the six categories of goods which were selected for particular study. These proved very fruitful in providing additional information and elaborating on that already available.

26. Work on the first part of the study was primarily concerned with retailing in different towns. This was based on data received at the end of 1970 from the Department of Trade and Industry on retailing in fifty large towns in 1966, collected during the Census of Distribution for that year, and on figures for the same towns as published in the 1961 Census. The main objectives are to analyse both variations in labour productivity between towns and changes over the period from 1961 to 1966 in relation to such factors as labour market conditions, the importance of multiple organizations, and the growth in size of towns. In addition, a study was made of changes in retail productivity and structure at the national level, between 1957 and 1966.

27. Mr T.S.Ward continued to work on the project under the direction of Mr K.D.George, and under that of Professor W.B.Reddaway while Mr George was on sabbatical leave.

INTERNATIONAL FREIGHT TRANSPORT AND SHIPPING CONFERENCES

28. This research is being undertaken by Mr B.M.Deakin and Mrs T.Liesner under the general direction of Professor W.B.Reddaway.

29. Earlier phases of this work were described in the Ninth and Tenth Reports. During the past academic year work continued on the analysis of data, previously assembled, on the operation of shipping conferences, and on the method of pricing shipping services. Five chapters were drafted and distributed for comment, and meetings with shipowners were held to discuss various aspects of these results. A computable model of relative prices was devised and applied to cargo data. The results throw some light upon the factors which influence the structure of prices made by shipping conferences.

INFLUENCE OF BRITISH GOVERNMENT POLICIES ON ECONOMIC DEVELOPMENT IN THE REGIONS

30. Work on this project was undertaken by Mr J.Rhodes and Mr A.Kan under the general direction of Professor W.B.Reddaway. The aims and methods were outlined in the Department's Ninth Report. The work is now completed and the results were published in November 1971 as an Occasional Paper entitled *Office Dispersal and Regional Policy*, by John Rhodes and Arnold Kan.

31. The research was concerned with the question of whether more offices can be moved out of London into less congested areas, and in particular whether they can be moved to development areas where more job opportunities are badly needed. On the basis of an examination of company accounts and detailed discussions with companies which had already moved, it appears that movement out of London has paid off even better than the companies had expected, but few of them went to the development areas. An assessment was made of Government policies introduced between 1964 and 1970 to influence the location of office and other non-manufacturing activity serving national markets. Reasons for the comparative lack of success of this policy, and suggestions for making that policy more effective, were also considered. The book concludes that more movement of non-manufacturing work could be secured if modestly increased financial inducements were available. These would be less costly per new job created in the Development Areas than the incentives given to manufacturing industries.

32. In September 1971 Mr J.Rhodes presented a paper on these results to a conference organized in Cambridge by the Regional Studies Association.

ECONOMIC IMPACT OF THE BRITISH PATENT SYSTEM

33. The remaining research work on this subject - mainly on detailed case studies of pharmaceuticals, basic chemicals, electronics and 'the small inventor', to supplement the results of the main industrial enquiry - has been carried out, and a fairly complete draft of the entire study is now in existence. It is hoped that this will be published as Volume II of *The British Patent System* in 1972.

34. Mr C.T.Taylor continued to be engaged on the project under the direction of Mr A.Silberston.

THE FINANCIAL STRUCTURE IN OPERATION

35. The purpose of this project is to examine the effects of the application of financial pressure on the contemporary U.K. economy. Mr E.W.Davis published two articles in the *Bankers' Magazine* (November and December 1970) on 'Financial Innovation and the Credit Squeeze'. In addition he worked on problems of scale associated with the financial operation of companies and of biases in the implementation of monetary policy. Specifically he has been seeking to assess the effects of tight monetary policy on the financial operation of firms of different categories, i.e. size and growth, etc. Of particular concern is the relationship between trade credit, bank borrowing, and liquidity. Another aspect under examination is access to the new issue market by previously unquoted companies. Data should be assembled and available for analysis by the end of 1971.

36. It became increasingly evident as the study progressed that the economy was in a phase where financial pressure firmly applied in the conventional manner, though highly successful in turning around an adverse balance of payments, was being accompanied by rising prices and rising unemployment at the same time. An assessment of this aspect was clearly central to the project and Mr A.T.K.Grant (who is directing the project) has concentrated on it since the beginning of April.

COMPARATIVE STRUCTURE AND SCALE

37. This enquiry is being carried out by Mr T.A.J.Cockerill under the direction of Mr A.Silberston. It began in 1969, initially for two years, with the help of a grant from the Social Science Research Council, but an extension has been obtained until September 1972 to allow the work to be completed. It is hoped to publish the results in the Occasional Paper series of the Department of Applied Economics.

38. A description of the scope and purpose of the study, together with an outline of the first year's work, was given in the Tenth Report. Since that Report, the sample of industries included in

the analysis was slightly altered, partly on account of data problems. Garments and electric motors and generators were excluded, and domestic electric appliances were substituted. During the year to September 1971, the preparation of the steel and brewing studies reached an advanced stage, and work also began on writing up the man-made fibres enquiry. Much of the basic data for the automobile enquiry was collected. Field interviews with respondents in a number of industries in France were also carried out.

39. In the final year of the project it is proposed to carry out further interviews in Europe as well as in the U.K., and to complete the enquiry. In all, five industries have been studied.

40. Mr C.F. Pratten continued to work on his investigations of economies of scale in British industry and other aspects of industrial economics. An Occasional Paper, *Economies of Scale in Manufacturing Industry*, will be published in December 1971. The following articles were also written by Mr Pratten during the year covered by this Report:

'A Case Study of a Conglomerate Merger' (*Moorgate and Wall Street Review*, Spring 1970).
'Economies of Scale for Machine Tool Production' (*Journal of Industrial Economics*, April 1971).

PRODUCTION CONDITIONS IN INDIAN AGRICULTURE

41. Mrs K. Bharadwaj continued to be engaged on this project. It is hoped to publish the results in the Occasional Paper series during 1972.

OPTIMAL PLANNING IN THE U.S.S.R.

42. The aim of this project, which is being undertaken by Mr M. Ellman in association with Dr C.H. Feinstein, was described in the Tenth Report.

43. The preliminary results of the research were contained in the Occasional Paper, *Soviet planning today: proposals for an optimally functioning economic system*, by Michael Ellman, published in August 1971. The following articles by Michael Ellman were published during the year: 'From the first stage of planning to the second' (A review article, *Ost-Europa Wirtschaft*, 1970, No. 4).

'What kind of economic reform does the Soviet Union need?' (*Cambridge Review*, Vol. 92, No. 2203, 28 May 1971).

44. During the year Mr Ellman read papers on Soviet planning to seminars at Birmingham University, the University College of Swansea, and the London School of Economics. He also attended the Conference on Labour Productivity on the theme 'Industrial management - East and West' at Ravello (Italy) in August 1971, and the VIIth International Seminar of the Centro Studi e Ricerche su Problemi Economico-Sociali at Stresa (Italy) in September 1971.

THE ROLE OF PRIVATE AND PUBLIC INVESTMENT IN THE ECONOMIC DEVELOPMENT OF DEVELOPING COUNTRIES

45. This project was completed by 1 May 1971. The main outcome was an Occasional Paper by Mr M.P. Ward entitled *The Role of Investment in the Development of Fiji*, to be published early in 1972. An official report by Mr Ward on the National Income and Balance of Payments of Fiji was published late in 1971 by the Government Printer in Fiji. An article by Mr Ward, 'Aspects of the Official National Income Tables of Fiji,' appeared in the *Review of Income and Wealth* in September, and a second article, also by Mr Ward, 'The Brussels Tariff Nomenclature and Developing Countries' will appear in *The Economic Record* in December 1971.

46. At a conference in September held at the Institute of Development Studies, University of Sussex, Mr Ward read a paper on 'Macro-Economic Projection Techniques for Developing Countries; The Seers Model'. This conference was jointly organized by Mr Clive Bell, of the Institute of Development Studies, and Mr Ward. The edited papers and proceedings are being prepared for publication and were also used as the basis of a seminar for senior government officials of developing countries, held at the Institute in November. A paper on 'Foreign Private Investment and Economic Development' was prepared by Mr Ward for the annual Research Conference on Economic Development held at Sussex University in September.

NATIONAL INCOME STATISTICS

47. This project started on 1 May. Its main objective is to find methods for improving the accuracy of national income estimates, especially the valuation of manufacturing stocks. The research is being related to economic policy decisions, cyclical fluctuations, and economic forecasts. The investigation is being carried out by Mr M.P. Ward under the general direction of Mr W.A.H. Godley.

48. Early work on this project was concerned with a general analysis of the independence of the income and expenditure estimates of the Gross National Product and with the accuracy of the provisional national income figures when compared with subsequently published revised estimates. It also examined the problems of measuring real product. The enquiry is now concentrated on the specific problems involved in measuring the value of manufacturing stocks, and a survey of major British firms is currently in progress. This survey is mainly to find out what different accounting methods are used by manufacturing companies to value their stocks of raw materials, work in progress and finished goods. A related aspect of this enquiry is the extent to which companies take account of inflation in stock and asset valuation in general, and how different procedures are reflected in published trading profits.

49. It is hoped that the investigation will lead to a better understanding of the stocks component in the national accounts and that the relevance of the official estimation procedures to company accounting methods can be improved.

EFFECTS OF ECONOMIC POLICY

50. Work on this related group of projects, which has been accepted as a programme by the Social Science Research Council, was started in October 1970 under the general direction of Mr W.A.H. Godley. Research staff working on the project during part or all of the period covered were as follows: Mr C.T. Taylor, Mr J. Rhodes, Mr B.C. Moore, Mr R.J. Tarling, Mr J. Llewellyn, Mr B. Stafford, and Mrs J.M. Marquand. Teaching staff who have taken an interest in the programme include Professor N. Kaldor, Professor W.B. Reddaway, Mr A. Silherston, and Mr T.F. Cripps. Mr C. Allsopp, of New College, Oxford, has also been associated with the programme.

51. The general purpose of the research is to improve the information and analysis needed for economic policy. The main emphasis is not on issues connected with short-term demand management, but on those aspects of policy which influence longer term characteristics of the economy, such as its rate of growth and its regional, industrial, and sectoral composition (including in the latter term the size and composition of the public sector itself). The development of a framework for assessing the macroeconomic implications of the Government's public expenditure plans (and also those of joining the Common Market) went on throughout the year. An assessment of the Government's White Paper 'Public Expenditure 1969/70-74/5, Cmnd. 4578', was carried out - as a trial run - and published in January by *The Times Business News* in two articles by Messrs Godley and Taylor.

52. Work on growth and growth potential proceeded under the more specific direction of Professor Kaldor. So far twelve economies - the United Kingdom, the United States, Canada, Japan, and eight European countries - have been examined on a broad sectoral basis. A 100-page report, which represents the first two parts of this study, has been written and circulated informally. Part I of the report presents the essential characteristics of output and employment growth and their inter-relationships. Part II examines the implications for the U.K. if it is to grow in a manner consistent with its own past as well as with the past behaviour of other countries. An Appendix to Part I presents the derived data and equations examined. Subsequent reports will consider the sources of productivity growth in individual sectors, the nature of labour supply, and the mechanism of labour transfer between sectors.

53. A further component of the programme is an investigation into the effects of the Regional Employment Premium (R.E.P.). When introduced in 1967 for a seven-year experimental period, it was hoped that the unique features of R.E.P. would make a new and substantial contribution to the solution of the persistent problem of high unemployment in areas such as Northern Ireland,

Scotland and parts of Wales and Northern England. The primary objective of this research is a quantitative assessment of that contribution, and to compare it with the impact of other forms of Government financial help for these areas.

A QUANTITATIVE MODEL OF THE EDUCATION SYSTEM

54. This project, begun in October 1970, is being undertaken by J.E. Woods under the direction of Professor Stone.

55. Work concentrated on (a) the extension of the model (see Professor Stone's paper in *Minerva*, Vol. III, No. 2) to allow explicitly for the interaction of demand and supply factors in the determination of the distribution of places occupied in the educational system; (b) and attempt to incorporate social factors into the model; and (c) the use of education as a factor in production functions and of educational production functions.

56. The following papers were presented:

'The Fundamental Matrix of the Active Sequence' by Richard Stone (Fifth International Conference on Input-Output Techniques, Geneva, 1971).

'A System of Social Matrices' by Richard Stone (Twelfth General Conference of the International Association for Research in Income and Wealth, Ronneby, Sweden, 1971).

DIFFERENTIATION AND STRUCTURAL CHANGE IN PEASANT AGRICULTURE

57. This research is being carried out by Mr M.P. Cowen in association with Mr D.M.G. Newbery. Mr Cowen started fieldwork in Nyeri District, Kenya, in February 1971 after a preliminary period of about three months in Nairobi.

58. The aim of the project is to study the inter-relationship between farms of different size in labour supply and demand, and to try to identify the processes leading to differences in size, type of inputs, and willingness to undertake new techniques and methods. Mr Cowen has experienced difficulties in conducting fieldwork, owing to local climatic conditions, and the indications are that he will need to spend more time collecting data in Kenya than was originally intended.

DEVELOPMENT OF IMPROVED METHODS OF TEACHING MATHEMATICS TO ECONOMISTS

59. The aims of this project are: (1) to develop methods for teaching basic mathematical concepts and the language of elementary mathematics to first-year economics undergraduates of a non-specialist mathematical background so that they may not be handicapped in understanding those parts of economics which involve mathematical reasoning; (2) to develop more effective methods for teaching mathematical and statistical subjects to economics undergraduates at all levels.

60. At present the project is focused on the teaching of very elementary mathematics to first-year economists, within the framework of the syllabus of the course 'Very elementary mathematics for economists' of sixteen lectures which have recently been given each Michaelmas Term by Professor Champernowne. We intend to experiment with three methods of teaching for this syllabus and we hope to draw conclusions about their relative effectiveness as well as to gain experience in their use. At the beginning of the Michaelmas Term a large proportion of the first-year economists will take a test-paper in mathematics for us and fill in a questionnaire about their background, etc. This should enable us to compare the degrees of progress achieved by groups subjected to different teaching methods by the end of term, when a second test will be taken. Undergraduates who attend the first of Professor Champernowne's lectures will be invited to volunteer for one of three groups receiving different forms of instruction for the same syllabus: (i) his usual sixteen-lecture course only, (ii) the same supplemented by six 'computer-aided classes' of one hour each, (iii) no lectures in mathematics but a teach-yourself course of reading, supplemented for those who feel the need by six one-hour consultation classes under Mr Ron Smith for discussing difficulties. Weekly lists of questions are to be distributed to all three groups and answer-sheets handed in will be marked and corrected. A record will be kept of the participation and progress of balanced sets of participants in these three groups.

61. The following methods and materials will be used:

- (i) a loose-leaf course booklet which amounts to being a text-book covering the syllabus in very elementary mathematics;

- (ii) a series of teach-yourself programmed learning books covering the same syllabus (these course booklets and programmed learning books are being written by Professor Champernowne and Mrs Nickson and are to be issued only to the third group of volunteers, those asked not to attend the lectures);

- (iii) we have hired a display screen which will be coupled to a Hewlett-Packard desk computer for illustrating the use of various mathematical concepts in calculations. We believe that this tool has great potentialities and that these are probably even greater for teaching statistical methods and mathematical economics and prelims. mathematics than for teaching very elementary mathematics;

- (iv) the comparison of the scores obtained in the mathematical test-paper at the beginning of term should yield interesting conclusions;

- (v) light should be thrown on the attitude of undergraduates towards learning very elementary mathematics. We are mainly concerned with those who have not previously found mathematics in itself interesting, and we shall seek to arouse such interest, as well as interest in learning particular branches of the subject as an aid in passing examinations and in learning parts of economics.

As explained above, it is expected that the results of the second test to be held in December will throw some light on the relative effectiveness of the various teaching methods. In addition to the work on very elementary mathematics Mrs Nickson has also worked with Dr Marris in the preparation of teaching material for the Quantitative Mathematics in Economics Part I, Dr Marris has agreed to give valuable aid in the arrangement of the test-paper at the beginning of the term.

62. Mrs Nickson has already received a number of interested enquiries about the project from specialists in education, including an invitation to address a conference about it. She hopes to publish an article about the results in some educational journal such as that of the Society for Research in Higher Education.

(B) INDUSTRIAL RELATIONS AND SOCIOLOGY

MANAGEMENT ORGANIZATION AND INDUSTRIAL RELATIONS

63. The origins and objectives of this enquiry, which is being conducted by Mr D.J. Roberts under the direction of Professor H.A. Turner, were outlined in the previous Reports of the Department. As the Tenth Report stated, most of the data is being obtained by interviewing the managements of companies in the motor, engineering, and shipbuilding industries. The interview programme proceeded satisfactorily during the year despite certain problems caused by (a) the spread of industrial unrest, and (b) the tendency of companies to collapse either during or shortly after the interviews (e.g. Rolls Royce and B.S.A.).

64. Two additional steps were taken in the research. First, a very simple postal questionnaire was sent to a hundred selected establishments in February 1971, but unfortunately this was followed just two days later by the national strike of the postal workers. Despite a repeat request for information sent out when the strike ended, the response rate was, not unnaturally, extremely low so that the survey did not prove very useful in terms of interesting or helpful data. During the summer, however, permission was secured from the Department of Employment and Productivity to examine some of their material on strikes, and a number of visits were made to their statistics centre at Watford. Two main sets of information were collected: first, strike data on selected companies in engineering, shipbuilding, and iron and steel for the years 1968-70, updating the original background material of the project, and secondly, a very detailed analysis was made of industrial disputes in the motor vehicles industry, 1965-70. A short paper, 'The Labour Government and Industrial Relations in the Motor Industry' was written by Mr Roberts on the basis of the material collected, and is now being revised with a view to publication in a journal.

65. In other respects, research has continued along the lines indicated in previous reports. When analysis of the data acquired in the main programme of 'structured interviews' with companies is completed it is hoped to draft a general report early in 1972.

66. This study has been undertaken by Mr D.A.S. Jackson under Professor H.A. Turner's direction. Its aims and methods were outlined in the Eighth and Ninth Reports.

67. In addition to the papers, published jointly or separately by the participants, which are listed in previous Reports, the following papers by Mr Jackson are being published:

'Wage Policy and Industrial Relations in India' (*Economic Journal*, March 1972).

'Economic Development and Income Distribution in Eastern Africa' (*Journal of Modern African Studies*, November 1971).

'The International Corporation in the Third World' (*Proceedings of the Conference of the Society of Business Economists on the International Corporation*, Unwin Brothers Limited, 1971).

'Social Planning and the Poverty of Nations' (*Proceedings of a Conference at the Institute of Development Studies on Macroeconomic Projection Techniques for Development Planning*).

'Assets, Liabilities and Poverty' (With Ann Fink of Oxford University, *Social and Economic Administration*, October 1971).

68. A joint paper on inflation, based partly on the work in Argentina and Chile referred to in the Tenth Report, is being completed. Professor Turner was invited to give the annual Ralph Geary Lecture of the Irish Institute of Economic and Social Research in Dublin in May: this was also based on comparative work on inflation and incomes policy arising from the study, and is to be published separately. The first draft of a book on the results of the project as a whole has been completed and is being reviewed.

69. A paper by Professor H.A. Turner, entitled 'Can Wages be Planned?', first presented to an international conference on *The Crisis in Planning* organized by the Institute of Development Studies, is being published shortly (Chatto and Windus) with the conference proceedings.

JOB EVALUATION

70. This study's purpose was referred to in the Tenth Report, which also noted certain publications, and recounted how delays in completing arrangements to visit Communist countries to study their wage structures had finally been overcome. Mr L.J. Handy's visits produced a survey of wage systems in the U.S.S.R. and Poland, but it was necessary to conduct a good deal of supplementary enquiry by correspondence. However, a reasonably complete picture is now available to add to the material referred to in previous reports, and it is intended to assemble the results into monograph form next year.

WAGE DETERMINATION AND WAGE DRIFT IN THE CONSTRUCTION INDUSTRY

71. This project was started by Mr L.J. Handy under the supervision of Professor H.A. Turner in 1970 and early developments were detailed in the Tenth Report. The general analysis of wage movements by Mr Handy has been written up with a view to publication in the near future.

LABOUR RELATIONS IN MINING

72. This project (which is referred to in previous Reports), conducted by Mr L.J. Handy under the direction of Professor H.A. Turner, has been written up in two parts which deal in turn with wages and strikes in the industry. Publication arrangements will be made shortly.

COST-BENEFIT RETURNS OF MANPOWER RECRUITMENT SYSTEMS IN THE STEEL INDUSTRY

73. An outline of this study was given in a previous Report. The analysis of the data is now complete and the results are being written up. It is hoped to publish these results as a book.

74. One aspect of the research was concerned with the effect of taxation on earnings in the steel industry. This produced interesting results which, when generalized, provided the basis for an article in *New Society*, 25 February 1971: 'Real Net Incomes and the Wage Explosion', by H.A. Turner and S.F. Wilkinson, and for a paper to the British University's Industrial Relations Association in June 1971 entitled 'Wages and Taxes'. A second, longer paper is now being prepared for publication.

75. During early 1971 the Rt Hon. Aubrey Jones, former Chairman of the National Board for Prices and Incomes, joined the Department as a Visitor. With some collaboration from Professor H.A. Turner he is making a study of prices and incomes policies with particular reference to the British experience of 1964-70. The Nuffield Foundation has made a grant to assist the study.

76. Mr A. H. M. Fels (who had previously made an independent review, commissioned by the N.B.P.I. itself, of the Board's operation and methods of enquiry) has been engaged on the project as research consultant since its inception, and Mr D.A.S. Jackson will join it as econometrician during the Michaelmas Term 1971. A substantial preliminary study by Mr Fels, *The British Prices and Incomes Board* is to be published early in 1972, as Occasional Paper No. 29.

LIFE-TIME EARNINGS PATTERNS

77. This project is being undertaken by Mrs J.C. Craig under the direction of Professor H.A. Turner. Its aim is to investigate the relationship between age, pay, and occupational status in different jobs and industries. A worker's attitude to his wage at any one moment is presumably influenced by his expectations of what will happen to it in the future, and even for manual workers there are several different patterns of life-time earnings. These have practical importance: for example, what may be seen from the outside as pay relationships in an occupational hierarchy or as conflicts over 'vertical' differentials, may in fact be relativities between successive age cohorts or struggles to protect life-time earnings expectations.

78. In the white-collar field, whether the age-pay progression of particular occupations is 'steep' or 'flat' is also emerging as an important consideration in comparing the pay of jobs at similar levels of skill, as is the manner by which the progression is achieved.

79. The work entails collection and analysis of age-earnings data for various occupations and studying the factors which affect the patterns revealed.

VARIATIONS IN TRADE UNION ORGANIZATION AMONG WHITE-COLLAR WORKERS

80. This project, which is being carried out by Dr R.M. Blackburn, Dr K. Prandy, and Mr A. Stewart, was started in October 1967. Most of the work is now completed and several publications are being prepared, including a book discussing the main results.

SOCIAL STATUS IN GREAT BRITAIN

81. This project began on 1 May 1971. Departmental staff engaged on the project are Dr R.M. Blackburn and Mr A. Stewart, and associated with the project are Professor J.A. Banks, University of Leicester, Mr K. Dixon, University of York, and Mr M. Green, University of Strathclyde.

82. The first stage of the project is an analysis of data on social interaction, collected in interviews for two other projects, 'Variations in Trade Union Organization Among White Collar Workers', and 'Social and Industrial Determinants of Worker Attitudes'. The object is to examine the extent of regular patterns of social interaction and their relationship to a stratification system. Work on this stage is well advanced and results are very encouraging.

83. The larger part of the project is the planning, administration, and analysis of a survey, conducted in a number of different geographical regions, to extend the methods of the first stage to areas and occupations not covered by the previous two surveys, and to seek answers to more general problems associated with a theory of social status. In particular it will be concerned with, (a) the relationship between occupation and social status, (b) the relationship between the prestige aspect and the relational aspect of social status, and (c) the compatibility of local status systems and some determinants of variations.

SOCIAL AND INDUSTRIAL DETERMINANTS OF WORKERS' ATTITUDES

84. The aims and methods of this project, which began in October 1968, were described in earlier Reports. All fieldwork is now complete and analysis of data is well advanced. A book describing the findings is being prepared by the investigators, Dr R.M. Blackburn and Mr J.M. Mann.

(C) NEW RESEARCH PROJECTS

85. The following new research projects were planned to begin in 1971-72, the principal investigators being given in brackets:

The Soviet Economic Mechanism (Mr M.J. Ellman).

Some Economic and Social Effects of Migration to and from Great Britain (Mr B.M. Deakin and Dr K. Prandy).

Companies in the Sixties (Dr G. Whittington).

Elites in the British Class Structure (Mr A. Giddens).

Pricing in the Trade Cycle (Mr W.A.H. Godley).

II. Publications

MONOGRAPH SERIES

86. This series, which is published by the Cambridge University Press, contains reports of investigations which have been carried out by members of the Department's research staff and others directly collaborating in its work. The following appeared during 1970-71:

No. 18. *Second Abstract of British Historical Statistics*, by B.R. MITCHELL and H.G. JONES.

Forthcoming titles include:

Abstract of British Historical Statistics, by B.R. MITCHELL and P. DEANE (reprint of original 1962 publication).

Take-overs: Their Relevance to the Stock Market and the Theory of the Firm, by AJIT SINGH.

New Commodities and Consumer Behaviour, by D.S. IRONMONGER.

British Monetary Policy 1924-1931: The Norman Conquest of \$4.86, by D.E. MOGGRIDGE.

OCCASIONAL PAPERS

87. This series, published for the Department by the Cambridge University Press, is designed primarily for the rapid publication of research results which have topical interest. The following titles were added in 1970-71 to those listed in previous Reports:

No. 23. *Towards Economic Independence: Papers on the Nationalization of the Copper Industry in Zambia*, by M.L.O. FABER and J.G. POTTER.

No. 24. *International Big Business 1957-1967: A Study of Comparative Growth*, by ROBERT ROWTHORN in collaboration with STEPHEN HYMER.

No. 25. *Soviet Planning Today: Proposals for an Optimally Functioning Economic System*, by MICHAEL ELLMAN.

No. 27. *Britain and the Common Market: The Effect of Entry on the Pattern of Manufacturing Production*, by S.S. HAN and H.H. LIESNER.

Forthcoming titles include:

The Prediction of Profitability and Other Studies of Company Behaviour, by GEOFFREY WHITTINGTON (published December 1971).

The Role of Investment in the Development of Fiji, by MICHAEL WARD.

Economies of Scale in Manufacturing Industry, by C.F. PRATTEN (published December 1971).

The British Prices and Incomes Board, by ALLAN FELS.

Office Dispersal and Regional Policy, by JOHN RHODES and ARNOLD KAN (published December 1971).

The Pattern of Ordinary Share Ownership 1957-1970, by JOHN MOYLE (published December 1971).

Effects of the Selective Employment Tax: Final Report, by W.B. REDDAWAY and D.R. GLYNN.

Production Conditions in Indian Agriculture, by KRISHNA BHARADWAJ.

More Fortran Programs for Economists, by L.J. SLATER.

A PROGRAMME FOR GROWTH

88. This series, published by Chapman and Hall Limited, describes the progress of work on economic growth undertaken at the Department under the direction of Professor Richard Stone. A tenth volume was published in December 1970:

The Determinants of Britain's Visible Imports 1949-1966, by TERENCE BARKER.

CAMBRIDGE STUDIES IN SOCIOLOGY

89. The Cambridge University Press publishes this series of Monographs on subjects of both theoretical and social interest and based on the findings of empirical sociological investigations. No new titles appeared during the year 1970-71, but the following is to be published in the coming year:

Family Structure in Nineteenth Century Lancashire, by M. ANDERSON.

CAMBRIDGE PAPERS IN SOCIOLOGY

90. This series, published by the Cambridge University Press, is intended to provide rapid publication of works which are between journal articles and Monographs in length. It is hoped to publish the following during the coming year:

Workers' Attitudes to Technology, by D. WEDDERBURN and R. CROMPTON.

REPRINT SERIES

91. These are selected papers which members of the Department's research staff and others working in direct collaboration with the Department have contributed to learned journals and other publications.

The following titles were added in 1970-71:

No. 292. 'New Estimates of Gross National Product for the United Kingdom 1839-1914', by PHYLLIS DEANE (*Review of Income and Wealth*, Series 14, No. 2, June 1968).

No. 307. 'Aggregation Error and Estimates of the U.K. Import Demand Function', by T.S. BARKER (*Econometric Study of the United Kingdom*, Macmillan, 1970).

No. 308. 'A Computerised Data Bank', by A.G. ARMSTRONG and L.J. SLATER (*Econometric Study of the United Kingdom*, Macmillan, 1970).

No. 309. 'Some Computer Applications in Quantitative Economics with Especial Reference to the Estimation of Integrated Demand Systems', by MICHAEL J. GREEN (*Bulletin of the International Statistical Institute*, Vol. XLIII, Book I, 1969).

No. 311. 'A Review of Input-Output Applications', by A.G. ARMSTRONG and D.C. UPTON (*Bulletin of the International Statistical Institute* Vol. XLIII, Book I, 1969).

No. 312. 'Towards a Freight Transport Function', by B.M. DEAKIN (*Programming for Europe's Collective Needs*, North Holland Publishing Company, 1970).

No. 318. 'Collective Bargaining and the Eclipse of Incomes Policy: Retrospect, Prospect and Possibilities', by H.A. TURNER (*British Journal of Industrial Relations*, Vol. VIII, No. 2).

No. 321. 'Beer Mergers Start to Pay', by ANTHONY COCKERILL (*The Times Business News*, 14 May 1970).

No. 322. 'On the Determination of the General Wage Level - A World Analysis; or "Unlimited Labour Forever"', by H.A. TURNER and D.A.S. JACKSON (*The Economic Journal*, Vol. LXXX, No. 320).

No. 324. 'Aspects of the Official National Incomes Tables of Fiji', by MICHAEL WARD (*The Review of Income and Wealth*, September 1971).

No. 326. 'The Relationship between Size and Efficiency', by AUBREY SILBERSTON (*The Changing Structure of British Industry*, Unwin Brothers Limited, 1970).

No. 327. 'The 1931 Financial Crisis - A New View', by D.E. MOGGRIDGE (*The Banker*, August 1970).

No. 328. 'From the First Stage of Planning to the Second', by MICHAEL ELLMAN (*Osteuropa-Wirtschaft*, No. 4, 1970).

No. 329. 'Financial Innovation and the Credit Squeeze', by EDWARD DAVIS (*The Bankers' Magazine*, November and December 1970).

No. 330. 'Income Differentials and Unbalanced Planning - The Case of Botswana', by D.A.S. JACKSON (*Journal of Modern African Studies*, Vol. 8, No. 4).

No. 331. 'An Econometric Model for National Manpower Planning', by COLIN LEICESTER (*Aspects of Manpower Planning*, English Universities Press, 1970).

No. 332. 'The Stability of Contractual Savings', by ALAN R. ROE (*The Building Societies Gazette*, Vol. CII, No. 1227).

- No. 333. 'The Political Economy of Collective Bargaining - The Case of Turkey', by D.A.S. JACKSON (*British Journal of Industrial Relations*, Vol. IX, No. 1).
- No. 334. 'Productivity Performance and Public Ownership', by RICHARD PRYKE (*British Steel*, No. 11, November 1970).
- No. 335. 'The Social Cohesion of Liberal Democracy', by MICHAEL MANN (*American Sociological Review*, Vol. 35, No. 3, June 1970).
- No. 336. 'Future Manpower Requirements of the British Economy', by COLIN LEICESTER (*Models of Manpower Systems*, English Universities Press Limited, 1970).
- No. 337. 'Public Expenditure and the Public', by T.S.BARKER and J.R.C.LECOMBER (*Moorgate and Wall Street Review*, November 1970).
- No. 338. 'Real Net Incomes and the Wage Explosion', by H.A.TURNER and FRANK WILKINSON (*New Society*, 25 February 1971).
- No. 339. 'Public Spending and Private Demand', by WYNNE GODLEY and CHRISTOPHER TAYLOR (*The Times Business News*, 17 and 22 February 1971).
- No. 340. 'Effective Rates of Protection for United Kingdom Production', by T.S.BARKER and S.S.HAN (*The Economic Journal*, June 1971).
- No. 341. 'National Balance Sheets and National Accounting - A Progress Report', by JACK REVELL and ALAN R.ROE (*Economic Trends*, May 1971).
- No. 342. 'What Kind of Economic Reform does the Soviet Union Need?', by MICHAEL ELLMAN (*Cambridge Review*, Vol. 92, No. 2203).
- No. 343. 'Econometric Models for the Personal Sector', by A.S.DEATON and K.J.WIGLEY (*Bulletin of the Oxford University Institute of Economics and Statistics*, Vol. 33, No. 2, May 1971).
- No. 344. 'Absenteeism in the Mines', by L.J.HANDY and H.A.TURNER, and 'The Mines: Supply and Demand', by L.J.HANDY and K.J.WIGLEY (*New Society*, 7 April 1966 and 12 November 1970).
- No. 345. 'RAS Projections when two or more complete Matrices are known', by J.R.C.LECOMBER (*Economics of Planning*, Vol. 9, No. 3, 1969).
- No. 346. 'Monetary Reform: The Structural Effect', by EDWARD DAVIS (*The Banker*, May 1971).
- No. 347. 'A Maximum Sustainable Growth Rate for British Industrial Outputs', by T.S.BARKER (*The Review of Economic Studies*, Vol. XXXVIII(3), July 1971).
- No. 348. 'Optimising Short-Term Economic Policy', by D.A.LIVESEY (*The Economic Journal*, Vol. 81, No. 323, September 1971).
- No. 349. 'Employment Plans, Performance and Future Prospects in Cuba', by B.H.POLLITT (*Prospects for Employment Opportunities in the Nineteen Seventies*, H.M.S.O., 1971).
- No. 350. 'The Dollar Crisis', by NICHOLAS KALDOR (*The Times Business News*, 6, 7, and 8 September 1971).
- No. 351. 'Conflicts in National Economic Objectives', by NICHOLAS KALDOR (*The Economic Journal*, Vol. LXXXI, March 1971).
- No. 352. 'The Case for Regional Policies,' by NICHOLAS KALDOR (*Scottish Journal of Political Economy*, Vol. XVII, No. 3, November 1970).

III. Other Activities

SEMINARS

92. During the year eight research papers, of which four were given by visiting economists, have been read at seminars held under the joint auspices of the Department and of the Faculty of Economics and Politics.

93. Ten papers were given in the series of seminars on Mathematical Economics and Econometrics. Visiting economists contributed six of these.

UNIVERSITY RELATIONSHIPS

94. Many teaching officers of the Faculty of Economics and Politics have directed, or otherwise taken part in, the research projects carried out by the Department. Members of the Department's staff have given lectures or taken classes for the Faculty, and nearly all of them are engaged in

undergraduate and post-graduate teaching. The Department has provided Faculty teaching officers with secretarial and computing assistance, as well as advice on electronic programming and data analysis. It has also assisted research students attached to the Faculty.

RELATIONSHIPS WITH OTHER BODIES

95. Financial assistance which the Department has received from outside bodies is dealt with the Section IV. Help of other kinds has come from many sources, including the Central Statistical Office, H.M. Treasury, the Overseas Development Administration, the Department of Employment and Productivity, the Department of Trade and Industry, the Social Science Research Council, the Bank of England, and a large number of industrial, shipping and business firms, trade and professional associations and trade unions.

VISITORS

96. The following visiting economists have worked in the Department during the year under review:

S.Adamec, Computing Research Center of the United Nations, Bratislava.
M.Inoue, Japan Economic Research Center, Tokyo.
The Rt Hon. Aubrey Jones, P.C., B.Sc. (Econ.) (London), formerly Chairman of the National Board of Prices and Incomes.
K.Polenske, University of Harvard.
V.Santoro, University of Naples.
M.Yanovsky, University of Jerusalem.

IV. Finance

97. The Department's annual expenditure, which is mainly covered by outside grants, rose from £148,564 in 1969-70 to £172,340 in 1970-71. 85 per cent. of the expenditure in 1970-71, as against 83 per cent. in 1969-70, was on stipends, wages, and related payments.

98. The annual grant which the University makes to the Department is not increased to take account of increased activities or higher costs generally. It is increased to allow for higher scales of stipends and wages, but only to the extent of eleven-eightieths of the additional cost of a notional establishment based on that which existed in 1956. Accordingly the University grant rose from £49,752 in 1969-70 to £54,716 in 1970-71, an increase of £4,964. Expenditure, on the other hand, rose by £23,776.

99. The following are the principal new or additional payments by outside bodies which have been accepted during the year, for payment over various periods. In most cases these come as grants in support of specific projects, but in some cases as donations to the Department's Research Account (which can be used for a wide range of purposes, not necessarily connected with any specific project):

	£
Social Science Research Council	113,965
Esmee Fairbairn Trust	20,000
Nuffield Foundation	5,000
Department of Trade and Industry	11,716
Department of Education and Science	4,510
TOTAL	£155,191

V. Staff

100. The research staff employed during the year 1970-71 was as follows: Director: Mr W.A.H. GODLEY, M.A. (Cantab.), M.A. (Oxon.), Fellow of King's College.

Special Appointment: Miss L.J.SLATER, Sc.D., Ph.D (Cantab.), D.Litt., Ph.D., M.A. (London), Fellow of Lucy Cavendish College.

Senior Research Officers: Mr R.M. BLACKBURN, M.A. (Cantab.), Ph.D. (Liverpool), Fellow of Clare College; Mr B.M. DEAKIN, M.A. (Cantab.), M.A. (Oxon.), Fellow of Magdalene College; Mr K. PRANDY, M.A. (Cantab.), Ph.D. (Liverpool), B.Sc. (Econ.) (London), Fellow of Fitzwilliam College; Mr C.T. TAYLOR, M.A. (Cantab.), M.A. (McGill), Fellow of University College.

Research Officers: Mr T.S. BARKER, M.A. (Cantab.), M.A. (Edin.), Fellow of Downing College; Mr T.A.J. COCKERILL, B.A. (Leeds); Mrs J.C. CRAIG, M.A. (Cantab.), B.Sc. (London); Mr E.W. DAVIS, M.A. (St Andrews); Mr M.J. ELLMAN, M.A. (Cantab.), M.Sc. (Econ.) (London); Mr L.J. HANDY, M.A. (Cantab.), B.A. (Leeds); Mr D.A.S. JACKSON, M.A., B.Phil. (Oxon.), Fellow of St Catharine's College; Mr C.S. LEICESTER, M.A. (Cantab.); Mrs T. LIESNER, M.A. (Cantab.), B.Sc. (Econ.) (London), Fellow of Girton College; Mr G.E.J. LLEWELLYN, B.A. (Hon.) (Victoria University of Wellington); Mr J.M. MANN, B.A., D.Phil. (Oxon.); Mr B.C. MOORE, M.Sc. (Econ.) (London); Mr C.F. PRATTEN, M.A. (Cantab.), B.A. (Bristol), Fellow of Trinity Hall; Mr J. RHODES, B.A. (Liverpool); Mr A.R. ROE, M.A. (Cantab.), M.Sc. (Wales), B.Comm. (Leeds); Mr A. STEWART, B.Sc. (Econ.) (London), M.A. (Cantab.); Mr J.D. SUGDEN, B.A. (Newcastle); Mr R.J. TARLING, M.A. (Cantab.); Mr M.P. WARD, M.A. (Cantab.), B.A. (Exeter), Fellow of Selwyn College; Mr G. WHITTINGTON, M.A., Ph.D. (Cantab.), B.Sc. (Econ.) (London), Fellow of Fitzwilliam College; Mr S.F. WILKINSON, M.A. (Cantab.); Mr V.H. WOODWARD, B.A. (Nottingham).

Junior Research Officers: Mr P.M. CROXFORD, B.A. (Exeter); Mr A.S. DEATON, B.A. (Cantab.); Mr C.H. FLETCHER, M.A. (Cantab.), B.A. (Exeter); Mr M.A. KING, B.A. (Cantab.); Mr D.A. LIVESEY, B.Sc. (Eng.) (London), Ph.D. (Cantab.); Mr J.S. O'DONNELL, B.A. (Cantab.); Mr D.J. ROBERTS, B.A. (Cantab.); Mr B. SHEAREY, M.Sc. (Leeds); Mr G.B. STAFFORD, B.A. (Strathclyde); Mr T.S. WARD, B.A. (Swansea).

Research Consultants and Research Fellows: Mr A.H.M. FELS, B.Econ., LL.B. (Western Australia); Mr D.R. GLYNN, M.A. (Oxon.); Mrs J.M. MARQUAND, M.A. (Oxon.); Mrs M.T. NICKSON, B.Sc. (McGill); Mr J.P. MOYLE, B.Sc. (Manchester), F.R.I.C.S.; Mr F.E. TOWNSON; Mrs J.M. WHEELER, B.Sc. (London), Ph.D. (Cantab.).

101. The following, although not formally holding University posts in the Department, were closely associated with the Department's research activities during the period under review:

Mr A.B. ATKINSON, B.A. (Cantab.), Fellow of St John's College, University Assistant Lecturer in Economics.
Mr C.J. BLISS, Ph.D., M.A. (Cantab.), Fellow of Christ's College, University Lecturer in Economics.
Professor D.G. CHAMPERNOWNE, M.A. (Cantab.), Fellow of Trinity College, Reader in Economics.
Miss P.M. DEANE, M.A. (Cantab.), M.A. (Glasgow), Fellow of Newnham College, University Lecturer in Economics.
Mr C.H. FEINSTEIN, Ph.D. (Cantab.), B.Comm. (Witwatersrand), Fellow and Senior Tutor of Clare College, University Lecturer in Economics.
Mr K.D. GEORGE, M.A. (Cantab.), M.A. (Wales), Fellow of Sidney Sussex College, University Lecturer in Economics.
Mr A.T.K. GRANT, C.B., C.M.G., M.A. (Cantab.), M.A. (Oxon.), Fellow of Pembroke College, Librarian-Secretary of the Faculty of Economics and Politics.
Mr H.H. LIESNER, M.A. (Cantab.), B.A. (Bristol), Fellow of Emmanuel College, University Lecturer in Economics.
Mr B.R. MITCHELL, Ph.D. (Cantab.), M.A. (Aberdeen), Fellow of Trinity College, University Lecturer in Economics.
Mr A. SILBERSTON, M.A. (Cantab.), Fellow of St John's College, University Lecturer in Economics.
Mr A. SINGH, M.A. (Cantab.), Ph.D. (Berkeley), M.A. (Howard), B.A. (Punjab), Fellow of Queens' College, University Lecturer in Economics.
Professor RICHARD STONE, C.B.E., Sc.D., M.A. (Cantab.), F.B.A., Fellow of King's College, P.D. Leake Professor of Finance and Accounting.

Professor H.A. TURNER, Ph.D. (Manchester), M.A. (Cantab.), B.Sc. (Econ.) (London), Fellow of Churchill College, Montague Burton Professor of Industrial Relations.
Mr K.J. WIGLEY, M.A., Ph.D. (Cantab.), Fellow of Corpus Christi College.

102. During the period covered by this Report the following members of the research staff left the Department to take the posts mentioned in brackets:

Mrs K. BHARADWAJ, M.A., Ph.D. (Bombay) (Reader in Economics, Delhi School of Economics).
Mr S.S. HAN, D.Phil. (York), B.A. (Yonsei) (Lecturer in Economics, University of Seoul).
Mrs T. LIESNER, M.A. (Cantab.), B.Sc. (Econ.) (London) (Librarian-Secretary of the Faculty of Economics and Politics).
Mr B.H. POLLITT, M.A. (Cantab.) (Lecturer in Economics, Queens' College, Cambridge).

ASSISTANT STAFF

103. The following is a list of the assistant staff at September 1971; Mrs E.C. BARKLEM; Mrs M.J. BARNETT; Mrs C.A. BAYFIELD; Mr E.D. BOUGOURD; Miss T.J. BROWN; Miss M.V. CLARK; Miss M.R. CLARKE; Mrs R. COE; Miss A.M. COOK; Miss D.M. DAY; Miss I.P. ELFIELD; Mrs P.A. FAIRCLOUGH; Miss T. GURNER; Miss L. HESSELMAN; Miss C.A. HUDSON; Mr M.J. HUGHES; Mrs J. JOHNS; Mrs J.M. LEVERETT; Mr H. LOSHAK; Miss A.L. MOORE; Mrs N.P. PEGRAM; Mrs O.E. PEPPERCORN; Mrs P.A. POLLITT; Miss P. RAYMENT; Miss S.D. SEAL; Mrs L.E. SILK; Mr R.M. SMITH; Miss B. TAYLOR; Miss A.C. TWYMAN; Mrs M.E. URWIN; Mrs G.E. WALLMAN; Mrs L.R. WALLMAN; Miss S.J. WALLMAN; Mrs S. WOODWARD.