

COWLES COMMISSION
FOR RESEARCH IN ECONOMICS

REPORT FOR 1938

COLORADO SPRINGS • COLORADO

COWLES COMMISSION FOR RESEARCH IN ECONOMICS

THE COWLES COMMISSION FOR RESEARCH IN ECONOMICS is a not-for-profit corporation, founded in 1932 for the purpose of conducting and encouraging investigations into economic problems. A function of the COMMISSION is to issue from time to time papers and monographs of an econometric or economic-statistical nature without, however, assuming responsibility for theories or opinions expressed therein. The COMMISSION is affiliated with the ECONOMETRIC SOCIETY, an international society for the advancement of economic theory in its relation to statistics and mathematics.

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RESEARCH FELLOWS

HORST MENDERSHAUSEN
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WORK OF THE YEAR

THE year 1938 has seen the publication, in August, of Cowles Commission Monograph No. 3, *Common-Stock Indexes, 1871-1937*, by Alfred Cowles 3rd and Associates, which is described in more detail below. This marks the completion of a project which has occupied much time of the staff for several years.

The Fourth Annual Research Conference on Economics and Statistics was held at Colorado College, Colorado Springs, from July 5 to 29, as described below. The average attendance per lecture was greater by 30 per cent, and the number of out-of-town participants by 40 per cent, than in 1937.

Several research projects have been under way during the year, and members of the staff have published or presented at scientific meetings a total of 27 papers, which are listed at the end of this report. It should be noted that the present report and the one issued in 1937 constitute a complete record of the activities of the Commission, since the 1937 report summarized the work of the Commission since its inception in 1932.

RESEARCH FELLOWS

DR. Abraham Wald joined the staff as a research fellow in July, going on leave of absence in September to accept a Carnegie fellowship at Columbia university. Dr. Wald is a native of Cluj, Rumania. He studied at the Uni-

versity of Vienna, where he received his doctor's degree in mathematics in 1930. Since 1931 Dr. Wald has published a total of 17 papers in various journals, including *Annals of Mathematical Statistics*, *Ergebnisse eines mathematischen Kolloquiums*, *Mathematische Annalen*, *Memoires et Communications de l'Academie des Sciences*, *Monatsberichte des Oesterreichischen Institutes für Konjunkturforschung*, *Sitzungsberichte der Wiener Akademie*, and *Zeitschrift für Nationalökonomie*. His special topic of investigation at the present time is index numbers and family incomes. For several years he was a collaborator of Professor Karl Menger at the University of Vienna and also was an associate of the Institute for Business Cycle Research in Vienna. Before coming to America he held a fellowship from the Geneva Research Center in Switzerland, where he was engaged in the study of economic problems.

Dr. Horst Mendershausen joined the staff as a research fellow in November. Dr. Mendershausen is a native of Koethen, Germany. Between the years 1930 and 1937 he studied medicine at the University of Freiburg, law and economics at the Universities of Berlin and Heidelberg, and economics and statistics at the University of Geneva and the Graduate Institute of International Studies at Geneva. In 1937 he received his doctor's degree in the field of economics from the University of Geneva. He has published a book, *Changes of Seasonality in the Building Industry*, Geneva, 1937 (in French) and 7 papers on economic and statistical topics in *Econometrica*, *The International Labour*

Review, Journal of Political Economy, and Zeitschrift für Nationalökonomie. During the year 1937-38 he held a fellowship of the Rockefeller Foundation, working in Oslo, Norway and in the United States. He has been particularly interested in the theory of economic time series and business-cycle analysis.

THE ECONOMETRIC SOCIETY IN 1938

THE Cowles Commission headquarters in Colorado Springs have continued as offices of the Econometric Society, an international society for the advancement of economic theory in its relation to statistics and mathematics, founded in 1930. Members of the Commission staff holding offices in the Society are Alfred Cowles 3rd, Harold T. Davis, Dickson H. Leavens, and Francis McIntyre. Mr. Cowles is secretary and treasurer of the Econometric Society and business manager of its quarterly journal, *Econometrica*, now beginning its seventh year. Mr. Leavens is managing editor of *Econometrica* and Professor Davis an associate editor. During 1938 was published Volume 6 consisting of 4 issues totalling 403 pages. The mailing list now includes 293 non-member subscribers, chiefly libraries, and 671 members of the Society, of whom 238 are in the United States and 433 in 36 different foreign countries. Professor McIntyre, serving as secretary of the American program committee of the Econometric Society, made the arrangements for the meet-

ing at Detroit, December 27-30, 1938, at which 29 papers were presented. Included in the Advisory Council of the Cowles Commission are Professor Ragnar Frisch of the University of Norway, editor-in-chief of *Econometrica*, and Arthur L. Bowley, Professor Emeritus of the University of London, president of the Econometric Society.

TEACHING ACTIVITIES

DURING the year the following courses for graduate and undergraduate students were conducted at Colorado College by a member of the Cowles Commission staff:

Professor McIntyre: *Advanced Economic Statistics*, second semester, 1937-38; *International Trade and Finance*, first semester, 1938-39.

In addition to the foregoing, weekly seminars have been conducted at the offices of the Cowles Commission, at which a number of recent books on economics and statistics have been reviewed and discussed. These sessions were attended by members of the Cowles Commission staff and of the Colorado College faculty, as well as by other residents of Colorado Springs interested in economic problems.

Members of the staff of the Cowles Commission also participated in the preparation and presentation of two broadcasts, as part of the regularly scheduled radio program of Colorado College.

LIBRARY

ADDITIONS to the library of the Cowles Commission during 1938 have totalled 130 books, 41 bound volumes of periodicals, and 206 pamphlets and reprints, in the fields of economics, mathematics, and statistics. Periodicals received currently number 75, including all the more important economic and statistical journals published in the United States and foreign countries. In addition, catalogue cards have been made for 105 books in these fields which have been added to the library of Colorado College during the year.

FOURTH ANNUAL RESEARCH CONFERENCE

THE Fourth Annual Research Conference on Economics and Statistics was held at Colorado College, Colorado Springs, from Tuesday, July 5 to Friday, July 29, 1938. Since the year 1938 marked the hundredth anniversary of the publication by Antoine-Augustin Cournot of his *Recherches sur les principes mathématiques de la théorie des richesses*, a pioneer work in mathematical economics, it was decided to feature this centenary in the program. The opening lecture by Professor Harold T. Davis was devoted to "Cournot—Pioneer in Scientific Economics." On the invitation of the Cowles Commission, the French Government sent as its official representative to the Conference Professor René Roy, Chief Engineer of the Department of

Bridges and Roads, Professor at the National School of Bridges and Roads and at the Institute of Statistics of the University of Paris. Professor Roy presented a public lecture in French on "La vie d'Augustin Cournot, sa pensée, ses tendances philosophiques et son oeuvre," and two lectures before the Conference: "A propos d'un centenaire: l'oeuvre économique d'Augustin Cournot," and "Etude particulière d'une loi de demand: le trafic postale en France de 1873 á 1936."

In addition to the public lecture of Professor Roy, 38 lectures were given before the Conference by the following speakers: R.G.D. Allen, London School of Economics; Siegfried von Ciriacy-Wantrup, University of California; Harold T. Davis, Northwestern University and Cowles Commission; Edward L. Dodd, University of Texas; Mordecai Ezekiel, United States Department of Agriculture; Arne Fisher, New York City; Merrill M. Flood, Princeton University; Frank L. Griffin, Reed College; Margaret F. W. Joseph, National Economic Institute, London; Emil Lederer, New School for Social Research; Abba P. Lerner, London School of Economics; Francis McIntyre, Cowles Commission and Colorado College; Joseph Mayer, Library of Congress; Horst Mendershausen, University of Geneva (now at Cowles Commission); F. D. Newbury, Westinghouse Electric and Manufacturing Company; Ugo Papi, University of Rome; O. Strange Petersen, University of Aarhus; Vergil D. Reed, United States Bureau of the Census; Charles F. Roos, Institute of Applied Econometrics;

René Roy, University of Paris; Henry Schultz, University of Chicago; Horace Secrist, Northwestern University; Gerhard Tintner, Iowa State College; Abraham Wald, Cowles Commission; Ralph J. Watkins, University of Pittsburgh; Elmer J. Working, University of Illinois; Theodore O. Yntema, University of Chicago.

Besides Professor and Mrs. Roy from France there were present at the Conference participants from seven other foreign countries, Denmark, England, Greece, Italy, Java, Rumania, and Switzerland, and from all sections of the United States. The total number of participants was 192, including 93 from out-of-town, and the average attendance per lecture was 47. The scientific program was supplemented by recreation, including teas, picnics, hikes, and various outdoor sports.

The Cowles Commission has published a report of the Conference, containing abstracts of the lectures, which is available on request.

PLANS FOR 1939 RESEARCH CONFERENCE

ARRANGEMENTS are now being made for the Fifth Annual Research Conference on Economics and Statistics, which will be held at Colorado College, Colorado Springs, from Monday, July 3 to Friday, July 28, 1939. Acceptances have already been received from a number of speakers and it is expected that there will be an excellent

program of lectures. Rooms and board for those attending the Conference and their husbands or wives will be available in the dormitories of Colorado College at about \$40 per person for the four weeks or \$11 per week. Approximate summer round-trip railroad rates to Colorado Springs are: from the North Atlantic seaboard, \$85; from Chicago, \$45; from the Pacific coast, \$65.

There is no charge for attendance at the Conference. All serious students are welcome. Those who are interested should notify the Cowles Commission in order that they may receive in the Spring a preliminary announcement of the program.

COWLES COMMISSION MONOGRAPHS

A FUNCTION of the Commission is to issue, from time to time, various monographs of an economic-statistical or econometric nature, without, however, assuming responsibility for theories or opinions expressed therein.

Monograph No. 3, *Common-Stock Indexes, 1871-1937*, by Alfred Cowles 3rd and Associates, 499 pp., announced in earlier reports, was published in August by the Principia Press, Bloomington, Indiana. This presents the result of a major project on which the staff of the Cowles Commission has been engaged for several years, the construction of new common-stock indexes from 1871 to date. These include all industrial and utility common stocks,

and about 93 per cent in market value of all rail stocks, quoted on the New York Stock Exchange from 1871 to 1917. Subsequent to 1917 (in some cases 1926 or later) are used the stocks included in the Standard Statistics weekly indexes, which represent in market value 90 per cent, of all common shares listed on the New York Stock Exchange. The indexes represent separately each of 59 groups, classified according to industry, as well as 10 combinations of these groups. For each of these 69 groups have been computed 7 different series, a total of 483 indexes. The 7 series are: monthly indexes of (1) stock prices, (2) stock prices adjusted for reinvestment of cash dividends, (3) yield expectations; and annual indexes of (4) yields, (5) dividend payments, (6) earnings-price ratios, and (7) earnings. All necessary corrections have been made for changes in capital structure. Appendixes include brief descriptions of all important United States and foreign indexes of common-stock prices, lists of the stocks included in the Cowles Commission indexes, and supplementary annual indexes of the prices of stocks used in the earnings indexes.

Monograph No. 4, *Silver Money*, by Dickson H. Leavens, is in press and will be published by the Principia Press early in 1939. This book will sketch the nineteenth-century background of the use of silver as money, the abandonment of bimetallism or the silver standard by the principal nations, the special position of the white metal in India and China, and the effects of the World War on the price and monetary use of silver. More detailed consid-

eration will be given to the silver agitation during the world depression, to American legislation on the subject and its effect on world monetary use of silver, and in particular to the abandonment of the silver standard by China.

OTHER STAFF PUBLICATIONS AND PAPERS

During 1938 members of the staff of the Cowles Commission published 9 papers in scientific periodicals (in addition to book reviews) and presented 18 papers at meetings of scientific societies, as follows:

HAROLD T. DAVIS

"Table I, Values of $J_0(x)$ and $J_1(x)$ from 15.50 to 25.00," "Table II, Zeros of $J_0(x)$ and $J_1(x)$," in *British Association Mathematical Tables, VI, Bessel Functions, Part I*, Cambridge University Press, 1937, pp. 162-170, 171-173.

"Mathematical Adventures in Social Science," *American Mathematical Monthly*, Vol. 45, February, 1938, pp. 93-104.

"The Place of Mathematics in the Modern World," presented at Chicago, Feb. 18, 1938, before a joint meeting of the Men's and Women's Mathematical Clubs of Chicago.

"Mathematical Adventures in Social Science," presented at Pittsburgh, February 23, 1938, before the University of Pittsburgh Chapter of Sigma Xi.

"Can Economic Phenomena be Measured?" presented at Bethlehem, Pennsylvania, March 14, 1938, before the Lehigh University Chapter of Pi Mu Epsilon.

"Cournot—Pioneer in Scientific Economics," presented at Colorado Springs, July 5, 1938, before the Cowles Commission Research Conference.

"The Significance of the Curve of Income," presented at Colorado Springs, July 6, 1938, before the Cowles Commission Research Conference.

"Social Implications of the Pareto Distribution of Special Abil-

ities," presented at Richmond, Virginia, December 28, before Section K of the American Association for the Advancement of Science.

"Some Lessons from the Equation of Exchange," presented at Detroit, December 30, 1938, before the Econometric Society.

DICKSON H. LEAVENS

"Five Years of Silver Subsidy: Retreat Begun from Futile, Unsound Policy," *Annalist*, Vol. 51, Jan. 7, 1938, pp. 4-5.

"Silver" [Review of 1937] *Engineering and Mining Journal*. Vol. 139, February, 1938, pp. 36, 37, 40.

"Report of the Atlantic City and Indianapolis Meetings [of the Econometric Society], December 27-30, 1937," *Econometrica*, Vol. 6, April, 1938, pp. 180-192.

"International Factors in the Postwar Silver Market," presented at Albuquerque, New Mexico, April 25, 1938, before the Southwestern Division, American Association for the Advancement of Science.

"A Bead-Sampling Machine for Use in the Class Room," presented at Detroit, December 28, 1938, before the American Statistical Association, and the Institute of Mathematical Statistics.

FRANCIS McINTYRE

"International Aspects of the Copper Industry," presented at Albuquerque, New Mexico, April 25, 1938, before the Southwestern Division, American Association for the Advancement of Science.

"Factors Determining Domestic and Foreign Copper Consumption," presented at Colorado Springs, July 8, 1938, before the Cowles Commission Research Conference.

"The Problem of the Stock Price Index Number," *Journal of the American Statistical Association*, Vol. 33, September, 1938, pp. 557-563.

"The Nature and Achievements of Foundations for Economic Research in the United States," presented at Stanford University, California, October 20, 1938.

"The Effect of the Undistributed Profits Tax upon the Distribution of Corporate Earnings—A Statistical Appraisal," presented at Detroit, December 28, 1938, before the Econometric Society.

HORST MENDERSHAUSEN

"On the Significance of Professor Douglas' Production Function," *Econometrica*, Vol. 6, April, 1938, pp. 143-153.

"The Definition of 'Equal Well-Being' in Frisch's Double-Expenditure Method," *Econometrica*, Vol. 6, July, 1938, pp. 285-286.

"'Clearing Variates' in Confluence Analysis," presented at Colorado Springs, July 7, 1938, before the Cowles Commission Research Conference (to be published in the *Journal of the American Statistical Association*).

"Relations between Income and Savings of American Metropolitan Families," presented at Detroit, Dec. 29, 1938, before the Econometric Society.

ABRAHAM WALD

"The Approximative Determination of Indifference Surfaces by Means of Engel Curves," presented at Colorado Springs, July 12, 1938, before the Cowles Commission Research Conference.

"Generalization of the Inequality of Markoff," *Annals of Mathematical Statistics*, Vol. 9, December, 1938.

"Contributions to the Theory of Statistical Estimation," presented at Detroit, December 27, 1938, before the Institute of Mathematical Statistics.

"Criteria for a Constant Preference Scale Expressed in Terms of Engel Curves," presented at Detroit, December 29, 1938, before the Econometric Society.

COWLES COMMISSION MONOGRAPHS

No. 1. DYNAMIC ECONOMICS, by Charles F. Roos, Director of Research, National Recovery Administration. 1934. 275 pages. Price \$3.50. This book is one of the few that attempt to apply mathematical analysis in the investigation of economic theory. It goes further than most previous studies by differentiating between theories of static and dynamic economics. The book contains a series of separate studies, the theoretical parts being chiefly concerned with the modification and extension of classical theories by the introduction of various dynamic elements.

No. 2. NRA ECONOMIC PLANNING, by Charles F. Roos, Director of Research, Cowles Commission for Research in Economics, formerly Director of Research, National Recovery Administration. 1937. 596 pages. Price \$5.00. This book first traces the historical background of the forces leading to the passage of the NIRA and its administration. Later chapters describe the background of issues which arose. Solutions attempted by the NRA are described, the reasons for adopting them given, and the degree of their success appraised. An endeavor is made to appraise constructively this great undertaking and to throw light on the important question: What can we expect from economic planning?

No. 3. COMMON-STOCK INDEXES, 1871-1937, by Alfred Cowles 3rd and Associates. 1938. 499 pages. Price \$6.00. For description see pages 8-9.

No. 4. SILVER MONEY, by Dickson H. Leavens. To be published early in 1939. About 400 pages. Price \$4.00. For description see pages 9-10.

In addition, the Cowles Commission has sponsored the publication of a text book by two members of its staff:

ELEMENTS OF STATISTICS, by Harold T. Davis and W. F. C. Nelson. Second edition, 1937. 434 pages. Price \$4.00. The elements of the subject are presented without recourse to calculus, but with as complete mathematical treatment as is possible with this limitation. The illustrative materials and problems have been taken chiefly from data of economic significance.

Orders should be sent to
PRINCIPIA PRESS, INC.
BLOOMINGTON, INDIANA

