

Research Developments in American Agricultural History since 1960: The Northern Farm Economy*

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LOUIS B SCHMIDT, a pioneer in the study and teaching of agricultural history in the United States, urged historians in 1915 to direct more attention to American agriculture and its role in national economic development.¹ His call has been repeated with regularity ever since. A quarter-century later, Schmidt himself reiterated his plea in essentially identical terms, and twenty years after that, the US Department of Agriculture historian, Wayne Rasmussen, while appreciative of the field's growing strength and achievements, called for an increased output of research in certain neglected areas.² More recently, as the volume of published research expanded, entreaties for methodological change have begun to appear. Asserted John Schlebecker in 1960, 'Since agricultural history first acquired independent status it has been carried forward without much theoretical direction'.³ Harold Woodman, writing a decade later on the state of research, felt that 'What has been most lacking in a good deal of previous work and what is now needed in agricultural history is a synthesis, a conceptual framework'.⁴ Harry Scheiber com-

plained that 'More than perhaps any other major subfield of American economic history, research on agriculture has gone forward without much sense of a unifying broad design or "leading hypothesis"'.⁵

To what extent have agricultural historians responded to such challenges? This bibliographical essay is a progress report on research, debate and publication in American agricultural history since 1960. Its geographic coverage is limited to work concerned with the northern farm economy in the states of the Northeast and most of the Middle West. Occasionally, studies published before 1960 or dealing with other regions are considered, but usually only in the context of their influence on more recent work and on developments in the northern region. The coverage is not confined to the products of any single methodology or academic discipline, although it will be obvious that work done by those applying traditional historical techniques predominates.

The major topics discussed in the paper are those receiving the most attention in the periodical and monographic literature. The sizeable amount of work produced during this period precludes the citation of every pertinent work on these subjects or inclusion of other topics. The selections thus are representative rather than exhaustive on each topic or of the field as a whole. Readers who seek additional bibliographical sources will find especially valuable guides among the volumes published by the University of California (Davis) Agricultural History

*I wish to thank Jeremy Atack for his valuable comments on an earlier draft of this paper. (This is the second in a series of bibliographical articles on American agricultural history. The first article, by Allan G Bogue on North American Grasslands, appeared in Vol 30, part 1, 1982.)

¹Louis B Schmidt, 'The Economic History of American Agriculture as a Field of Study', *Mississippi Valley Historical Review*, III, June 1916, pp 39-40.

²Louis B Schmidt, 'The History of American Agriculture as a Field of Research', *Ag Hist*, XIV, July 1940, pp 117-26; Wayne D Rasmussen, 'Forty Years of Agricultural History', *Ag Hist*, XXXIII, Oct 1959, pp 177-84.

³John T Schlebecker, 'The World Metropolis and the History of American Agriculture', *Jour Econ Hist*, XXI, June 1960, p 187.

⁴Harold D Woodman, 'The State of Agricultural History', in Herbert J Bass (ed), *The State of American History*, Chicago, Quadrangle, 1970, p 223.

⁵Harry N Scheiber, 'Poetry, Prosaism, and Analysis in American Agricultural History', *Jour Econ Hist*, XXXVI, Dec 1976, p 919.

Center on northern agricultural topics; those by Douglas E Bowers on American farming, by Bowers and James B Hoehn on midwestern agriculture, and by Henry C Dethloff on agrarian political organizations are particularly informative. Dennis Nordin's compilation of theses in agricultural history, and the annual listings of books in the field published each October in *Agricultural History*, offer additional bibliographic guidance.⁶

The Northern Farm Economy: An Overview

In the methodological sweep that began in the late 1950s to transform research in American economic history, scholars using the new techniques largely neglected the study of northern farming. Not that agricultural change in general was slighted. The article customarily credited as the first in this new genre, 'The Economics of Slavery in the Ante-Bellum South', by Alfred Conrad and John Meyer, published in the *Journal of Political Economy* in 1957, dealt with this subject.⁷ This seminal paper, however, steered practitioners of the new methodology toward studies of the South, with its fascinating 'peculiar institution' of slavery, rather than toward analyses of the national agricultural economy. As yet, there exist no intensive econometric or theoretical studies for the East or Middle West comparable to those by Robert Fogel and Stanley Engerman, Gavin Wright, Richard Sutch, and Roger Ransom or others on the southern rural economy.

The apparent disinterest among the new economic historians, most of whom were trained as economists, in the national farm economy is puzzling. On the eve of the American Civil War, agriculture consumed a greater proportion of national resources than did any other single economic activity. Almost five times as many individuals worked in the agricultural sector as in manufacturing in 1860, and nearly eight times as much capital was utilized in farming as in either transport or manufactures. As late as 1879, agriculture still accounted for a larger share of total commodity output than did industry, mining or construction.⁸ Even within industrializing regions, the direct agricultural linkages to domestic manufacturing and to foreign trade remained strong throughout the nineteenth century. Agricultural production also experienced a substantial productivity gain in the presence of western land settlement, technological innovation and diffusion, and the advance of agricultural knowledge generally. Yet in the face of agricultural commercialization, industrialization and the emergence of large corporate organizations, farmers sought and ultimately secured governmental programmes that supported prices, curtailed output and slackened the exit of marginal producers from farming. Given its profound historical effect on national resource allocation, agriculture, particularly that of the northern states, deserves more attention than it has received from cliometricians.

Scholars working with a more conventional methodology, however, sustained or even strengthened their interest in northern agriculture. Several books published since 1960 provide a fresh overview of agrarian development in that region. None do so more comprehensively than Clarence Danhof's *Change in Agriculture: The Northern United States, 1820-1870*. Covering such

⁶Douglas E Bowers, *A List of References for the History of Agriculture in the United States, 1790-1840*, Davis, Univ of California Agricultural History Center, 1969, Douglas E Bowers and James B Hoehn, *A List of References for the History of Agriculture in the Midwest, 1840-1900*, Davis, Univ of California Agricultural History Center, 1973, Henry C Dethloff, *A List of References for the History of Farmers Alliance and the Populist Party*, Davis, Univ of California Agricultural History Center, 1973, John T Schlebecker, *Bibliography of Books and Pamphlets on the History of Agriculture in the United States, 1607-1967*, Santa Barbara: American Bibliographical Center - Clio Press, 1969; Dennis S Nordin, 'Graduate Studies in American Agricultural History', *Ag Hist*, XLI, July 1967, pp 275-312.

⁷Alfred H Conrad and John R Meyer, 'The Economics of Slavery in the Ante-Bellum South', *Jour Political Economy*, LXVI, April 1958, pp 95-122.

⁸See US Bureau of Census, *Eighth Census of the United States*, and Robert E Gallman, 'Commodity Output, 1839-1899' in National Bureau of Economic Research, *Trends in the American Economy in the Nineteenth Century*, Princeton, Princeton Univ Press, 1960, pp 13-71.

topics as commercialization, marketing, farm technology, farm-making, financing, and management of the farm enterprise, the book has become one of the most commonly cited works on this subject, and deservedly so. By combining an economist's outlook on issues with the historian's reliance on archival and other qualitative sources, Danhof produced a work both fresh in its perspective and accessible to a wide audience of readers. As a standard reference work it is unique among recent general monographs in its focus on the agriculture of the North.⁹ Three books that also present an overview but with a national orientation have strengthened our historical understanding of the American farmer. Paul Gates' *The Farmer's Age*, Gilbert Fite's *The Farmers' Frontier* and John Schlebecker's *Whereby We Thrive* each provide detailed, careful literary accounts of broad aspects of agricultural change that will appeal to readers who come to the subject from various disciplines and backgrounds, and each is produced by a mature scholar in American agricultural history.¹⁰

Complementing these volumes are various collections of articles published in book form or as special issues of journals. The symposia sponsored by the Agricultural History Association since 1967 have been published in the January issues of *Agricultural History* in 1969, 1972, 1974-77, 1979, 1980, and 1982. Several appeared as separate volumes, among them D P Kelsey (ed), *Farming in the New Nation: Interpreting American Agriculture, 1790-1840*, and James W Whitaker (ed), *Farming in the Midwest, 1840-1900*. As a collection reflecting research from the early years covered by this bibliographical review, Wayne Rasmussen's *Readings in the History of American Agriculture* published in 1960 is valuable, as is his

four-volume set, *Agriculture in the United States, A Documentary History*. Dealing with a more limited topical or geographic coverage are Earl Hayter's *The Troubled Farmer, 1850-1900: Rural Adjustment to Industrialization*, Allan Bogue's *From Prairie to Corn Belt*, Paul Gates' *Agriculture and the Civil War*, Gilbert Fite's *American Farmers: The New Minority* and Merle Curti's *The Making of an American Community*.¹¹

Land Policy, Settlement and the Westward Expansion

Few themes in American history are more deeply embedded in the national folklore or have commanded more enduring scholarly attention than the westward movement. The settlement of the West involved issues of public land disposal, land usage, migration and immigration, railroad development, financial speculation, frontier survival and adaption to new environmental conditions, to name a few. It formed a central part of the economic experience of farmers in the nineteenth-century North.

Among agricultural historians, no one has matched the contribution of Paul Gates to this subject, through his own work and that of his students. His productive longevity is impressive. Joining his list of publications since 1960 are his *History of Public Land Law Development*, *Pressure Groups and Recent American Land Policies*, and *Landlords and Tenants on the American Frontier: Studies in American Land Policy*. He has also continued his contributions to the journal literature,

⁹Clarence H Danhof, *Change in Agriculture, The Northern United States, 1820-1870*, Cambridge, Mass, Harvard Univ Press, 1969.

¹⁰Paul W Gates, *The Farmer's Age: Agriculture, 1815-1860*, New York: Holt, Rinehart and Winston, 1960; Gilbert C Fite, *The Farmers' Frontier, 1865-1900*, New York: Holt, Rinehart and Winston, 1966; John T Schlebecker, *Whereby We Thrive: A History of American Farming, 1607-1977*, Ames: Iowa State Univ Press, 1975.

¹¹Wayne Rasmussen (ed), *Readings in the History of American Agriculture*, Urbana: Univ Illinois Press, 1960, and *Agriculture in the United States, A Documentary History*, New York: Random House, 1975. Earl Hayter, *The Troubled Farmer, 1850-1900: Rural Adjustment to Industrialization*, De Kalb, Northern Illinois Univ Press, 1968; Paul W Gates, *Agriculture and the Civil War*, New York, Alfred A Knopf, 1965; Gilbert Fite, *American Farmers: The New Minority*, Bloomington, Indiana Univ Press, 1981; Merle Curti, *The Making of an American Community*, Stanford: Stanford Univ Press, 1959.

particularly with respect to the homestead laws.¹²

Gates' studies have been joined by that of several others, work well represented in three collections of essays. Vernon Carstensen's volume, *The Public Lands: Studies in the History of the Public Domain*, contains articles by Clarence Danhof, Thomas Le Duc, Fred Shannon, and Gates that relate to land disposal and settlement. Howard B. Ottoson's *Land Use Policy and Problems in the United States* extends this concern with land usage. Finally, David M. Ellis' *The Frontier in American Development: Essays in Honor of Paul Wallace Gates* assembles a group of experts with divergent opinions on this topic.¹³ The volumes by Malcolm Rohrbough, *The Land Office Business: The Settlement and Administration of American Public Lands, 1789-1837*, and Marion Clawson, *The Land System of the United States*, both published in 1968 complement these collections.¹⁴ The westward movement on a broader scale continues to interest historians, as reflected in the publication of the fourth edition of Ray Billington's *Westward Expansion: A History of the American Frontier* in 1974, his *The Westward Movement in the United States* (1959), and his second edition of *The American Frontier*, produced in 1966. A second edition of Thomas Clark's *Frontier America: The Study of the Westward Movement* appeared in 1969.¹⁵

¹² Paul W. Gates, *History of Public Land Law Development*, Rockville, Maryland, Zenger Publishing Co., 1978; *Landlords and Tenants on the Prairie Frontier: Studies in American Land Policy*, Ithaca, Cornell University Press, 1973; *Pressure Groups and Recent American Land Policies*, Ithaca: Department of History, Cornell Univ., 1980. See also, his 'The Homestead Law in Iowa', *Ag Hist.*, 38, April 1964, pp. 67-78; 'The Homestead Act: Free Land Policy in Operation', in Howard Ottoson (ed.), *Land Use Policy and Problems in the United States*, Lincoln, Univ. Nebraska Press, 1963; and 'Research in the History of the Public Lands', *Ag Hist.*, 48, Jan. 1974, pp. 31-50.

¹³ Vernon Carstensen (ed.), *The Public Lands: Studies in the History of the Public Domain*, Madison, Univ. Wisconsin Press, 1962; Howard Ottoson, op. cit.; David M. Ellis (ed.), *The Frontier in American Development: Essays in Honor of Paul Wallace Gates*, Ithaca: Cornell Univ. Press, 1969.

¹⁴ Malcolm Rohrbough, *The Land Office Business: The Settlement and Administration of American Public Lands*, New York, Oxford Univ. Press, 1968; Marion Clawson, *The Land System of the United States*, Lincoln, Univ. Nebraska Press, 1968.

¹⁵ Ray Billington, *Westward Expansion: A History of the American Frontier*, 4th edn., New York, Macmillan, 1974; *The Westward Movement in the United States*, Princeton, New Jersey, Van Nostrand, 1959, and *The American Frontier*, 2nd edn., Washington,

The sustained level of interest in this area has not diminished in the periodical literature. In a special symposium observing the American national bicentennial, both Paul Gates and Gilbert Fite contributed survey pieces on land policy and the pioneer farmer; in an earlier issue of *Agricultural History* Gates had reviewed research on public land history. Geographers revealed a strengthening interest in this subject as well.¹⁶ Readers desiring a more complete historiographical review should see Robert Swierenga's very thorough article in the *Western Historical Quarterly* in 1977.¹⁷

Economists, and historians using economic methods, in their research on land policy, disposal, usage, and speculation have focused both on issues of equity, such as identifying the beneficiaries of land policy, and efficiency, such as whether policies distorted resource allocation. At the centre lie such questions as the role of the speculator and the influence on industrial expansion exerted by the possible over-allocation of resources to agriculture as a result of the unrealistically cheap land. Robert Swierenga's work on Iowa land speculation, in articles and in his book *Pioneers and Profits*, reveals comparatively little distortive effect from speculation in that state. Robert Fogel and Jack Rutner, in an important but often overlooked cliometric study, investigated the efficiency effects of land policy and sale, including those resulting from speculative activity, and found them to be relatively

Service Center for Teachers of History, 1966; Thomas Clark, *Frontier America: The Story of the Westward Movement*, 2nd edn., New York, Schribner and Sons, 1969.

¹⁶ Paul W. Gates, 'An Overview of American Land Policy', in Vivian Wiser (ed.), 'Bicentennial Symposium: Two Centuries of American Agriculture', *Ag Hist.*, 50, Jan. 1976, pp. 213-29; Gilbert C. Fite, 'The Pioneer Farmer: A View Over Three Centuries', *ibid.*, pp. 275-89. For examples of the geographer's work, see Andrew H. Clark, 'Suggestions for the Geographical Study of Agricultural Change in the United States, 1790-1840', *Ag Hist.*, 46, Jan. 1972, pp. 155-72; Hildegard Binder Johnson, 'A Historical Perspective on Form and Function in Upper Midwest Rural Settlement', *Ag Hist.*, XLVIII, Jan. 1974, pp. 11-25, and P. J. Perry, 'Agricultural History: A Geographer's Critique', *Ag Hist.*, XLVI, April 1972, pp. 259-67.

¹⁷ Robert P. Swierenga, 'Land Speculation and its Impact on American Economic Growth and Welfare: A Historiographical Review', *Western Historical Quarterly*, 8, July 1977, pp. 283-302.

minor. Their conclusions, which differed from older views, were challenged by R Taylor Dennen, whose dynamic model suggested a more significant influence on efficiency, a conclusion closer in accord with that of such traditional land historians as Benjamin Hibbard. Peter Passell and Maria Schmundt, who analysed the relationship between land disposal policy and industrial development, found that combining cheap land with high tariffs encouraged rather than inhibited manufacturing growth in nineteenth-century America. On a related issue, the econometric studies by Peter Temin on land availability, and Peter Lindert on the influence of land scarcity on human fertility, land rents, and technological change, explore the aspects of this subject.¹⁸

The notion that the West offered a

'safety-valve' outlet for eastern labour continued to attract interest, particularly among economists. Ellen Von Nardroff's 'The American Frontier as a Safety Valve — The Life, Death, and Reincarnation and Justification of a Theory', published in 1962, offers both an economist's critique and a summary review of the literature. Working with a new census data sample (see footnote 21), Robert Ankli more recently has re-examined the validity of this concept. Based on his estimates, the cost of establishing a viable farm operation by someone already resident in newly-settled areas was substantially less than estimated by Clarence Danhof in his classic article on this subject. Adding to the continuing debate, Jeremy Attack calculated costs for farms that were actually operating in settled and frontier areas, providing figures that supplement, and generally lie between, those of Ankli and Danhof.¹⁹

Once in the West, individuals who had migrated started establishing their farm and beginning a family. Martin Primack's work on clearing, fencing and capital formation provides quantitative evidence on this aspect of western agricultural development.²⁰ Combining demographic with economic analyses, Richard Easterlin produced a sizeable body of new knowledge regarding farm families, fertility change and settlement. His work, and that of the graduate

¹⁸ Robert P Swierenga, *Pioneers and Profits: Land Speculation on the Iowa Frontier*, Ames, Iowa State Univ Press, 1968. Also see his 'The Tax Buyer as a Frontier Investor Type', *Explorations in Economic History*, 7, Spring 1970, pp 257-92, and 'Land Speculator "Profits" Reconsidered: Central Iowa as a Test Case', *Jour Econ Hist*, XXVI, March 1966, pp 1-28. The econometric analysis by Robert Fogel and Jack Rutner, 'The Efficiency Effects of Federal Land Policy, 1850-1900: A Report on Some Provisional Findings', is in William O Aydelotte, Allan G Bogue and Robert Fogel (eds), *The Dimensions of Quantitative Research in History*, Princeton, Princeton Univ Press, 1972, pp 390-418; Dennen's comments are in R Taylor Dennen, 'Some Efficiency Effects of Nineteenth-Century Federal Land Policy: A Dynamic Analysis', *Ag Hist*, 51, Oct 1977, pp 718-36. For another economic examination of land policy and speculation, see Edward H Rastatter, 'Nineteenth Century Public Land Policy: The Case for the Speculator', in David Klingaman and Richard Vedder (eds), *Essays in Nineteenth Century Economic History: The Old Northwest*, Athens, Ohio Univ Press, 1975, pp 118-32; Thomas De Luc offers an historian's comment on this issue in his 'Public Policy, Private Investment, and Land Use in American Agriculture, 1825-1875', *Ag Hist*, XXXVII, Jan 1963, pp 3-9. In the issues of land scarcity and its relationship to other economic variables, see Peter Passell and Maria Schmundt, 'Pre-Civil War Land Policy and the Growth of Manufacturing', *Explorations in Economic History*, 9, Fall 1971, pp 35-48; Peter Temin, 'Land Scarcity and American Economic Growth', *Jour Econ Hist*, 26, Sept 1966, pp 277-98; Peter Lindert, 'Land Scarcity and American Economic Growth', *Jour Econ Hist*, XXXIV, Dec 1974, pp 851-84. For complementary studies on these issues, see Theodore Saloutos, 'Land Policy and its Relationship to Agricultural Production and Distribution, 1862-1933', *Jour Econ Hist*, XXII, Dec 1962, pp 445-60, and Folke Dövrings interesting report on contemporary reactions to US policy in his 'European Reactions to the Homestead Act', *Jour Econ Hist*, XXII, Dec 1962, pp 461-72. C Knick Harley, 'Western Settlement and the Price of Wheat, 1872-1913', *Jour Econ Hist*, XXXVIII, Dec 1978, pp 865-78 offers an explanation of land expansion and settlement as a response to market prices in an interesting economic approach to the issue.

¹⁹ Ellen Von Nardroff, 'The American Frontier as a Safety Valve — The Life, Death and Reincarnation and Justification of a Theory', *Ag Hist*, XXXVI, July 1962, pp 123-42; William M Tuttle, Jr, 'Forerunners of Frederick Jackson Turner: Nineteenth Century British Conservatives and the Frontier Thesis', *Ag Hist*, XLI, July 1967, pp 219-27; Robert E Ankli, 'Farm-Making Costs in the 1850's', *Ag Hist*, XLVIII, Jan 1974, pp 51-70 (see also Judith L V Klein's comments on Ankli's paper in the same issue on pp 71-4); Jeremy Attack, 'Farm and Farm-Making Costs Revisited', *Ag Hist*, 56, Oct 1982, pp 663-76. Danhof's piece appeared as 'Farm-Making Costs and the "Safety Valve": 1850-1860', *Jour Political Economy*, XLIX, June 1941, pp 317-59.

²⁰ Martin L Primack, *Farm Formed Capital in American Agriculture, 1850 to 1910*, New York: Arno Press, 1977; 'Farm Construction as a Use of Farm Labor in the United States, 1850-1910', *Jour Econ Hist*, 25, March 1965, pp 114-25; 'Farm Fencing in the Nineteenth Century', *Jour Econ Hist*, 29, June 1969, pp 287-89; 'Land Clearing Under Nineteenth Century Techniques: Some Preliminary Calculations', *Jour Econ Hist*, XXII, Dec 1962, pp 484-97; 'Land Capital Formation as a Use of Farm Labor in the United States, 1850-1910', *Jour Econ Hist*, XXVI, Sept 1966, pp 348-62.

students working with him, advanced our understanding of the complex interaction of population and economic change as it effected, and in turn was affected by, this establishment of agriculture in the western states. His is a skilful blend of theory, data and historical intuition. A large portion of this work draws upon a sample of economic and demographic data for 21,000 rural households randomly selected from the federal census manuscripts from 1860.²¹ In a series of articles and conference papers, Easterlin supplemented this data set with a wide range of additional materials to investigate rural family structure and characteristics, fertility decline, population change, settlement patterns and related subjects for the northern agricultural economy.²² Like Easterlin's, Richard Peet's analyses of the spatial expansion of agriculture, which applies von Thunen locational theory, both complements more traditional studies and points a way for further interdisciplinary investigation of agricultural development.²³

Technological Change, Scientific Farming and Productivity Growth

Technological improvement closely interacted with westward expansion and with a new attitude — a more scientific one — among American farmers. While not inducing a volume of books and articles equalling those on western land settlement or land policy, this subject nevertheless attracted a substantial degree of scholarly attention over the past two decades. Questions of technological innovation and diffusion lend themselves to economic analysis. In a classic cliometric study, 'The Mechanization of Reaping in the Ante-Bellum Midwest', Paul David developed a model involving farm size and relative factor prices to account for the slow acceptance of the mechanical reaper by American farmers. David's calculations of the threshold farm size required to justify adoption placed this major issue into a more quantitative, rigorous context, but some of his assumptions have been questioned. Alan Olmstead, for example, who proposed a generally more dynamic explanation, suggests that equipment-sharing among farmers could alter minimum farm size requirements for an individual producer, and Robert Ankli stresses the importance of machine reliability improvements and non-wage influences to reaper adoption.²⁴ To some degree the continuing controversy regarding reaper adoption reflects the inherent problems of applying microeconomic analysis to dynamic historical issues.

Articles by Rasmussen, Lave, Schlebeck, Drache, and Feller explore the ramifications of technological change in a broader context than those considering a single

²¹ Fred Bateman and James D Foust, *Agricultural and Demographic Records of 21,118 Rural Households Selected from the 1860 Manuscript Census* (computer data tape). Results of statistical tests of this sample are presented in Fred Bateman and James D Foust, 'A Sample of Rural Households Selected from the 1860 Manuscript Censuses', *Ag Hist*, XLVIII, Jan 1974, pp 75-93.

²² Richard Easterlin, George Alter and Gretchen A Condran, 'Farmers and Farm Families in Old and New Areas: The Northern States in 1860' (paper presented for the MSSB Summer Conference in Historical Demography, Williamstown, Massachusetts, July 1974); Richard Easterlin, 'Population Change and Farm Settlement in the Northern United States', *Jour Econ Hist*, XXXVI, March 1976, pp 47-75; and his 'Factors in the Decline of Farm Fertility in the American North', *Jour American History*, LXIII, Dec 1976, pp 600-14. On this subject, also see Don R Leet, 'Human Fertility and Agricultural Opportunities in Ohio Counties: From Frontier to Maturity, 1820-60', in Klingaman and Vedder, *op cit*, pp 138-58, in which the author analyses the relationship between land availability and the fertility pattern.

²³ Richard Peet, 'The Spatial Dynamics of Commercial Agriculture in the Nineteenth Century: A Von Thunen Interpretation', *Economic Geography*, 45, Oct 1969, pp 283-301, and 'Von Thunen Theory and the Dynamics of Agricultural Expansion', *Explorations in Economic History*, 8, Winter 1970/71, pp 181-201. These works are based on his dissertation, *The Spatial Expansion of Commercial Agriculture in the Nineteenth Century: A Theoretical Analysis of British Import Zones and the Movement of Farming into the Interior United States* (dissertation, Univ California-Berkeley, 1968).

²⁴ Paul A David, 'The Mechanization of Reaping in the Ante-Bellum Midwest', in Henry Rosovsky (ed), *Industrialization in Two Systems: Essays in Honor of Alexander Gerschenkron*, New York, John Wiley and Sons, 1966; Alan L Olmstead, 'The Mechanization of Mowing and Reaping in American Agriculture, 1833-1870', *Jour Econ Hist*, XXXV, June 1975, pp 327-52; Robert Ankli, 'The Coming of the Reaper', in Paul Uselding (ed), *Business and Economic History*, Urbana, Univ Illinois Bureau of Economic and Business Research, 1976, pp 1-24. Those interested in the related issue of motive power in the Midwest should see Ankli's 'Horses vs. Tractors on the Corn Belt', *Ag Hist*, 54, Jan 1980, pp 134-48.

innovation such as the reaper.²⁵ Each reveals the comparative ease with which Americans in the northern states accepted and utilized new technology. Similarly, in pieces dealing with New York, Gould Colman and Richard A Wines investigate technological adoption by farmers in that state, both finding relatively ready acceptance of new machinery by producers.²⁶

Scientific farming, being a less tangible and somewhat later development, has received less study over the past twenty years by agricultural historians than has technological change. Margaret Rossiter's *The Emergence of Agricultural Science* explores the development and application of agricultural chemistry with reference to Justus Liebig, the agricultural chemist.²⁷ Zvi Griliches' econometric studies of the diffusion of hybrid corn demonstrates the substantial effect that this innovation had on corn yields in the United States, especially since the Second World War.²⁸ Although many writers stress the importance of biological and chemical advances, and in a broader sense the significance of a 'scientific outlook' among

American farmers, the area remains largely unexplored.

The question of whether the American Civil War accelerated or retarded the mechanization of farms in the North has gained renewed attention from economic historians. Thomas Cochran, in an article published in 1961, re-opened the issue in the broad context of the effect of that military conflict on industrialization. Subsequently both Wayne Rasmussen and Alan Olmstead directed the inquiry more specifically to agriculture. Thus far, however, the recent investigations have centred on single innovations, such as the reaper, or the broad impact of technology on agricultural change.²⁹

In 1961 the US Department of Agriculture published as a technical bulletin Ralph A Barton and Glen T Loomis' productivity data series for the 1870-1958 period, thus providing a new long-term continuous measure of change in agriculture; the following year, estimates for this same period were published by Charles Meiburg and Karl Brandt.³⁰ On a more analytical level, the effects of technological advance, innovative diffusion, scientific methods and western settlement on productivity growth also were investigated. In 1966, William Parker, working with Judith L V Klein, published what is generally accepted as the first 'new economic history' piece devoted exclusively to northern agricultural history. The article, 'Productivity Growth in Grain

²⁵ Wayne D Rasmussen surveys a century of technological development in 'The Impact of Technological Change on American Agriculture, 1862-1962', *Jour Econ Hist*, XXII, Dec 1962, pp 578-91; Lester B Lave, 'Empirical Estimates of Technological Change in United States Agriculture, 1850-1958', *Jour Farm Economics*, 44, Nov 1962, pp 941-52; John T Schlebecker, 'Farmers and Bureaucrats: Reflections on Technological Innovation', *Ag Hist*, 51, Oct 1977, pp 641-55; Irwin Feller focuses on innovation and patent activity in 'Inventive Activity in Agriculture, 1837-1890', *Jour Econ Hist*, XXII, Dec 1962, pp 560-77; Hiram Drache investigates the influence of technological change on midwestern agriculture in the recent past in 'Midwest Agriculture: Changing with Technology', *Ag Hist*, 50, Jan 1976, pp 290-302; E L Jones surveys long-term influences on agricultural evolution in 'Creative Disruptions in American Agriculture, 1620-1820', *Ag Hist*, XLVIII, Oct 1974, pp 510-28; Richard K Vedder examines technological development from the implement manufacturers' perspective in 'Some Evidence on the Scale of the Antebellum Farm Implement Industry', in Paul Uselding, op cit, pp 25-35.

²⁶ Gould P Colman, 'Innovation and Diffusion in Agriculture', *Ag Hist*, XLII, July 1968, pp 173-87; Richard A Wines, 'The Nineteenth-Century Agricultural Transition in an Eastern Long Island Community', *Ag Hist*, 55, Jan 1981, pp 50-63.

²⁷ Margaret Rossiter, *The Emergence of Agricultural Science: Justus Liebig and the Americans, 1840-1880*, New Haven, Yale Univ Press, 1975.

²⁸ Zvi Griliches, 'Hybrid Corn: An Exploration in the Economics of Technological Change', *Econometrica*, 25, Oct 1957, pp 501-22; 'Research Costs and Social Returns: Hybrid Corn and Related Innovation', *Jour Political Economy*, LXVI, Oct 1958, pp 419-31; 'Hybrid Corn and the Economics of Innovation', *Science*, 132, July 1960, pp 275-80.

²⁹ Thomas C Cochran, 'Did the Civil War Retard Industrialization?' *Mississippi Valley Historical Review*, 48, Sept 1961, pp 197-210; Wayne Rasmussen, 'The Civil War: A Catalyst of Agricultural Revolution', *Ag Hist*, 39, Oct 1965 pp 187-95; Alan L Olmstead, 'The Civil War as a Catalyst for Technological Change in Agriculture', in Paul Uselding, op cit, pp 36-50. Harry Scheiber reviews the broader issue of the war's effect on economic development in 'Economic Change in the Civil War Era: An Analysis of Recent Studies', *Civil War History*, 11, 1965, pp 396-411, and Robert Jones examines the war's effect on farming in one northern state in his *Ohio Agriculture During the Civil War*, Columbus, Ohio State Univ Press, 1962.

³⁰ Glen T Barton and Ralph A Loomis, *Productivity of Agriculture, United States, 1870-1958*, US Department of Agriculture Technical Bulletin 1238, Washington, US Government Printing Office, 1961; Charles O Meiburg and Karl Brandt, 'Agricultural Productivity in the United States: 1870-1960', *Stanford Research Institute Studies*, 3, May 1962, pp 63-85.

Production in the United States, 1840-60 and 1900-10', appeared in *Output, Employment and Productivity Growth in the United States*, a volume in the National Bureau of Economic Research's *Studies in Income and Wealth* series.³¹ As in an earlier book in this series, the articles in the collection had been presented originally at a conference jointly sponsored by the Economic History Association and the National Bureau in which methods of economics were applied to historical issues. Like some writers preceding them, Parker and Klein computed new quantitative estimates, there being in this instance figures on output, input use and labour productivity in wheat, corn and oats cultivation over the latter half of the nineteenth century and into the twentieth. But they moved a step beyond, by attempting to assess the individual contribution of a complex of historical forces, notably the westward movement, technological change and scientific improvement, to measured productivity change. As a consequence the methods of the emerging new economic history were brought to the study of agriculture outside the slave South. The article became a landmark in the advance of the new methodology and in the historical study of northern agriculture, one still widely cited in the new literature and in contemporary textbooks. After this piece, Parker and others continued to expand the literature on related topics and for other farm products.³²

Parker, whose interests and skills led him to become a major link between the old and

the new in economic history as well as between economics and history, had been working on his agricultural studies since the late 1950s. His interest in both the qualitative and quantitative dimensions of technology, science and productivity growth is longstanding. Prior to the appearance of the paper with Klein, he had presented portions of his results at meetings of the Mississippi Valley Historical Association and the Economic History Association. A related version was published in 1971 in *The Reinterpretation of American Economic History*, edited by Robert Fogel and Stanley Engerman. His subsequent work elaborated upon the general theme of productivity growth, continuing into an article published in 1982 with Stephen J DeCanio that deals with scientific experimentation and market forecasting as sources of productivity growth in American agriculture. In a recent re-examination of the Parker-Klein analysis, Jeremy Atack and I, using a different data source for the nineteenth-century figures, calculated new yield and labour productivity estimates that were used to isolate the sources of measured change in an exercise modelled on the original one. Our conclusions indicate a larger growth in labour productivity in the 1860-90 period in wheat, oats and corn production, and enhanced the role of yield improvement relative to their original results.³³

Parker and Klein's study, while path-breaking, was nevertheless one that measured partial productivity. The next obvious need was to measure total factor productiv-

³¹ William N Parker and Judith L V Klein, 'Productivity Growth in Grain Production in the United States, 1840-1860 and 1900-1910', in National Bureau of Economic Research, *Output, Employment and Productivity in the United States After 1800*, New York, National Bureau of Economic Research, 1966, pp 523-82.

³² See, for example, Fred Bateman, 'Improvement in American Dairy Farming, 1850-1910', *Jour Econ Hist*, XXVIII, June 1968, pp 255-73, and 'Labor Inputs and Productivity in American Dairy Agriculture, 1850-1910', *Jour Econ Hist*, XXIX, June 1969, pp 206-29. These papers partition the sources of yield growth and measure the course of labour productivity change in dairy production over this period. They indicate that yield improvement, while substantial over this period (largely as a consequence of feeding improvement and diffusion of existing techniques) was insufficient to offset growing labour requirements resulting from increased commercialization of this branch of agrarian industry.

³³ William N Parker, 'Productivity Growth in American Grain Farming: An Analysis of its 19th-Century Sources', in Robert W Fogel and Stanley L Engerman (eds), *The Reinterpretation of American Economic History*, New York, Harper & Row, 1971, pp 175-86; 'Sources of Agricultural Productivity in the Nineteenth Century', *Jour Farm Economics*, XLIX, 1967, pp 1455-68; 'On a Certain Parallelism in Form Between Two Historical Processes of Productivity Growth', *Ag Hist*, 50, Jan 1976, pp 101-16; and William N Parker and Stephen J DeCanio, 'Two Hidden Sources of Productivity Growth in American Agriculture, 1860-1930', *Ag Hist*, 56, Oct 1982, pp 648-62. See also Parker's 'The Magic of Property', *Ag Hist*, 54, Oct 1980, pp 447-89. Jeremy Atack and Fred Bateman, 'Mid-Nineteenth Century Crop Yields and Labor Productivity Growth in American Agriculture: A New Look at Parker and Klein', in Gavin Wright and Gary Saxenhouse (eds), *Essays in Honor of William N. Parker* (forthcoming).

ity, a step taken by Robert Gallman in papers published in 1972 and 1975.³⁴ His estimates reveal a sustained and substantial expansion of productivity growth through the nineteenth century. These two carefully-crafted pieces quickly became standard references on this subject.

Although concerned directly with efficiency under the southern slave system, the 1971 article co-authored by Robert Fogel and Stanley Engerman by necessity of comparison, relates to northern agricultural productivity as do their comments on this same issue in their study of slavery, *Time on the Cross*. In a 1977 issue of the *American Economic Review*, they produced another analysis of this issue, a piece that partly was in response to their earlier work but which itself engendered further comments by Thomas Hashell, Donald Schaeffer and Mark Schmitz, Paul David and Peter Temin, and Gavin Wright. Their reply to this criticism appears in that journal in September 1980.³⁵ Agricultural historians, even those with professional interests totally unrelated to slave agriculture, will find this debate both informative and provocative in its implications for nineteenth century farming in other regions and under other organizational forms. The analysis of wheat supply and productivity by Franklin Fisher and Peter Temin, and the responses it elicited from Robert Higgs and Walter Page, although

more limited in scope, provide a similarly interesting exchange on an issue that merits attention from a wide range of scholars.³⁶

Agrarian Discontent, Railroads and Populism

Farmer discontent over economic conditions, and the resultant political agitation that occurred after the Civil War continued to interest historians during the past two decades. The subject is a compelling one that involves social and political events as well as economic ones. Under the pressures of deflation, indebtedness, increasing farm commercialization, growing dependence on railroads, the rise of large-scale corporate enterprise, enlarging geographic market size, and accelerating urbanization, American farmers, perceiving their situation to be worsening, sought political solutions to their woes. Out of this turmoil emerged a political philosophy that continues to be influential in the United States today. That scholars would develop and maintain an interest in these issues appears inevitable.

On these complicated historical questions, many leading historians accepted the position that the discontent expressed by farmers was justified. This view is represented in John Hicks' *The Populist Revolt*, originally published in 1931. While this subject involves an admittedly complex amalgam of economic and non-economic elements, farmers' complaints ultimately rested on their perception of economic sacrifice and discrimination. Thus several purely economic issues are fundamental, most notably, the level and trend in railroad rates for agricultural commodities, the course of income distributional changes

³⁴ Robert Gallman, 'Changes in Total U.S. Agricultural Factor Productivity in the Nineteenth Century', *Ag Hist*, XLVI, Jan 1972, pp 191-210, and 'The Agricultural Sector and the Pace of Economic Growth: U.S. Experience in the Nineteenth Century', in David Klingaman and Richard K Vedder, op cit, 35-76.

³⁵ Robert Fogel and Stanley Engerman, 'The Relative Efficiency of Slavery: A Comparison of Northern and Southern Agriculture in 1860', *Explorations in Economic History*, 8, Spring 1971, pp 353-67; 'Explaining the Relative Efficiency of Slave Agriculture in the Antebellum South', *American Economic Review*, 67, June 1977, pp 275-96; 'Explaining the Relative Effect of Slavery: Reply', *American Econ Rev*, 70, Sept 1980, pp 672-90. Thomas L Haskell, 'Explaining the Relative Efficiency of Slave Agriculture in the Antebellum South: A Reply to Fogel and Engerman', *American Econ Rev*, 69, March 1979, pp 206-7; Donald F Schaeffer and Mark D Schmitz, 'The Relative Efficiency of Slave Agriculture: A Comment', *American Econ Rev*, 69, March 1979, pp 208-12; Paul A David and Peter Temin, 'Examining the Relative Efficiency of Slavery: Comment', *American Econ Rev*, 69, March 1979, pp 213-18; Gavin Wright, 'The Efficiency of Slavery: Another Interpretation', *American Econ Rev*, 69, March 1979, pp 219-26.

³⁶ Franklin M Fisher and Peter Temin, 'Regional Specialization and the Supply of Wheat in the United States, 1867-1914', *Review of Economics and Statistics*, LII, May 1970, pp 134-49; Robert Higgs, 'Regional Specialization and the Supply of Wheat in the United States, 1867-1914: A Comment', *Rev Economics and Statistics*, LIII, Feb 1971, pp 101-2; Peter Temin, 'Regional Specialization and the Supply of Wheat in the United States, 1867-1914: A Reply', *Rev Economics and Statistics*, LIII, Feb 1971, pp 102-3. On the subject of productivity before the nineteenth century, see Duane E Ball and Gary M Walton, 'Agricultural Productivity Change in Eighteenth Century Pennsylvania', *Jour Econ Hist*, XXXVI, March 1976, pp 102-17.

between farm and non-farm sectors, domestic terms of trade in the agricultural sector, allegedly discriminatory interest or mortgage rates, and the presumed monopoly power exercised against farmers by the middlemen with whom they had to deal.

Since World War II, two parallel re-evaluations of late nineteenth-century agrarian unrest and the political response it engendered were emerging, one dominated by historians and the other by economists. In his presidential address before the Agricultural History Society in 1966, Theodore Saloutos reviewed the long history of academic debate over populism, focusing on the changing perceptions of that political movement. Among those who had been engaged in this re-examination were Richard Hofstadter, Seymour Lipset, David Shannon, Walter T K Nugent, Oscar Handlin, and Norman Pollack. Historians, usually displaying a broader interest than the purely political one, produced several books on this enduring topic in US history, including such studies as Pollack's *The Populist Response to Industrial America*, Nugent's *The Tolerant Populists*, the collection of essays edited by Vernon Carstensen, *Farmer Discontent, 1865-1900*, and Lawrence Goodwyn's *Democratic Promise: The Populist Movement in America*.³⁷

While historians debated the political implications of populism and the unrest from which it arose, economists were focusing more specifically on the economic

questions. In his *Growth and Welfare in the American Past*, Douglass North joined the debate by abstracting from the wider social and political context to examine railroad rates, agricultural terms of trade and mortgage charges. Using aggregated and long-term data series, he found little to support the protestors' economic complaints. Among historians more concerned with what actually happened than with what justifiably should have, North's seemingly attenuated analysis was received sceptically. But even fellow economists sympathetic to his methodological approach questioned North's conclusions. On the level and trend of railroad rates, for example, North's data, like that of Robert Fogel in his book on railroads, indicated that generally rates had fallen over the decades of the 'agrarian unrest'. Robert Higgs, however, failed to find any clear trend in farmers' terms of trade with the railways. Indeed his calculations showed real rates rising during the periods of most intense farmer agitation, a finding consistent with the traditional interpretation, yet his series also reveal years when, despite complaints to the contrary, rates paid to ship agricultural products were declining, and terms of trade shifting toward farmers. More recently, Mark Aldrich has challenged even Higgs' somewhat guarded conclusion that economic conditions at least during some periods justified farmer dissatisfaction, presenting a stronger economic case in favour of farmer political protest.³⁸

On a related economic issue, John Bowman had analysed midwestern land values in his dissertation and in subsequent published work. In 1974, working with Richard Keehn, he entered the debate regarding agricultural terms of trade during the last

³⁷ Theodore Saloutos, 'The Professors and the Populists', *Ag Hist*, XL, Oct 1966, pp 235-54; Richard Hofstadter, 'The Folklore of Populism', in *The Age of Reform*, New York, Alfred Knopf, 1955; Seymour Lipset, 'The Source of the Radical Right', in Daniel Bell (ed), *The Radical Right*, 1st edn, Garden City, NY, Doubleday, 1961; David Shannon, 'Was McCarthy a Political Heir of LaFollette?', *Wisconsin Magazine of History*, XLV, Autumn 1961, pp 3-9; Walter T K Nugent, 'Some Parameters of Populism', *Ag Hist*, XXXIX, April 1965, pp 68-74; Norman Pollack, 'Fear of Man: Populism, Authoritarianism, and the Historian', *Ag Hist*, XXXIX, April 1965, pp 59-67. J Roger Hollingsworth comments on Handlin's and Pollack's papers in 'Populism: The Problem of Rhetoric and Reality', *Ag Hist*, XXXIX, April 1965, pp 81-5. Among the relevant books are Norman Pollack, *The Populist Response to Industrial America*, Cambridge, Cambridge Univ Press, 1962; Walter T K Nugent, *The Tolerant Populists*, Chicago, Univ Chicago Press, 1963; Vernon Carstensen (ed), *Farmer Discontent, 1865-1900*, New York, John Wiley, 1974; Lawrence Goodwyn, *Democratic Promise: the Populist Movement in America*, New York, Oxford Univ Press, 1976.

³⁸ Douglass C North, *Growth and Welfare in the American Past*, Englewood Cliffs, NJ, Prentice Hall, 1966, ch 11; Robert Fogel, *Railroads in American Economic Growth*, Baltimore, Johns Hopkins Univ Press, 1964; Robert Higgs, 'Railroad Rates and the Populist Uprising', *Ag Hist*, XLIV, July 1970, pp 291-7; Mark Aldrich, 'A Note on Railroad Rates and the Populist Uprising', *Ag Hist*, 54, July 1980, pp 424-32. For more detail on Higgs' position, see his *The Transformation of the American Economy, 1865-1914*, New York, John Wiley and Co, 1971.

three decades of the nineteenth century. Bowman and Keehn found no support for believing that farmers in the states of Illinois, Indiana, Iowa, and Wisconsin suffered from deteriorating terms of trade over that period (1870–1900) as a whole. Actually, their analysis indicated a secular improvement in farmer's real purchasing power in those four states. On the other hand, like Higgs, they found substantial year-to-year fluctuations, and a close correspondence between them and variations in the strength of farmer protest. To some extent, Anne Mayhew attempted to bridge the seemingly contradictory gap between the nineteenth-century farmers' protestations and the positions of North, Fogel, and Bowman and Keehn, by arguing that the agrarian outcries were in large measure a response to the commercialization of American agriculture, a development that, through price and market behaviour, introduced the farmer to the unfamiliar, sometimes intimidating, world of business.³⁹

Beyond the more specific debates on the political interpretation of agrarian political movements, and on the economic condition of the farmer during the last third of the nineteenth century, historical scholars continued to investigate a variety of other aspects of this phenomenon. Don F Hadwiger offered a political scientist's comment on the general issue of farmers' historic role in politics, and several others, including Harold Woodman, William D Barns and George Cerny, have continued to examine the activities of the Grange and related phenomena. These have been supplemented with studies by, among others, K D Bicha on

populism in the Dakotas and Gerald Prescott on farm leaders in Wisconsin.⁴⁰

International and Interregional Trade and Marketing

As westward settlement, eastern urbanization and the extension of the transportation system in nineteenth-century America created new market opportunities, farmers were tempted increasingly into commercial production. As they moved into the exchange economy, they sought to produce surpluses beyond their immediate family needs to sell or barter for other goods. Technological improvement and rising productivity facilitated their attaining this objective as the nineteenth century wore on. Becoming more enmeshed in the market system, first on a local level but ultimately on an international one, farmers found not only new opportunities to increase their incomes but new problems as well. Still, the impulse proved irresistible. The rise of commercialized agriculture and the demise of family-oriented farm mark a central point in the transformation of agriculture in the United States.

The historic significance has been matched by scholarly interest. One of the most important continuing debates during the past two decades has centred on economic specialization and regional trade in the nineteenth century. The controversy extended beyond the usual bounds of agricultural history into the broader area of

³⁹ John D Bowman, 'An Economic Analysis of Midwestern Farm Land Values and Farm Land Income, 1860 to 1910', *Yale Economic Essays*, 5, Fall 1965, pp 317–62; John D Bowman and Richard Keehn, 'Agricultural Terms of Trade in Four Midwestern States, 1870–1900', *Jour Econ Hist*, 34, Sept 1974, pp 592–609; Anne Mayhew, 'A Reappraisal of the Causes of Farm Protest in the United States, 1870–1900', *Jour Econ Hist*, XXXII, June 1972, pp 464–75. See also Robert Klepper, 'The Economic Bases for Agrarian Protest in the United States, 1870–1900' (paper prepared for the University of Chicago Workshop in Economic History, April 1970), and Jeffrey C Williams, 'Economics and Politics: Voting Behavior in Kansas During the Populist Decade', *Explorations in Economic History*, 18, July 1981, pp 233–56.

⁴⁰ Don F Hadwiger, 'Farmers in Politics', *Ag Hist*, 50, Jan 1976, pp 156–70; Harold D Woodman, 'Chicago Businessmen and the "Granger" Laws', *Ag Hist*, XXXVI, Jan 1962, pp 16–24; William D Barns, 'Oliver Hudson Kelley and the Genesis of the Grange: A Reappraisal', *Ag Hist*, XLI, July 1967, pp 219–42; George Cerny, 'Cooperation in the Midwest in the Granger Era, 1869–1875', *Ag Hist*, XXXVII, Oct 1963, pp 187–205; K D Bicha, 'The Conservative Populists: A Hypothesis', *Ag Hist*, XLVII, Jan 1973, pp 9–24, and his 'Western Populists: Marginal Reformers of the 1890's', *Ag Hist*, 50, Oct 1976, pp 626–35; Gerald Prescott, 'Wisconsin Farm Leaders in the Gilded Age', *Ag Hist*, XLIV, April 1974, pp 183–99. In addition to the piece by Henry C Dethloff cited earlier, bibliographic source material for this topic is available in Denton E Morrison, *Farmers' Organizations and Movements: Research Needs and a Bibliography of the United States and Canada*, Michigan Agricultural Experiment Station Bulletin Number 24, East Lansing, Michigan, 1970.

economic development. At the centre of the academic exchange are questions of surplus, self-sufficiency and interregional trade patterns. The belief in an emerging system of regional specialization is an old one, in which the Northeast was seen as the major manufacturing zone, the Middle West as the food production centre and the South as the area where agricultural staples were produced for international export.

In an early product of the new economic history, *The Economic Growth of the United States, 1790-1860*, Douglass North developed a model for American development around this traditional concept of regional specialization. Two years after its publication, at the annual meeting of the American Economic Association, Albert Fishlow questioned North's position on interregional interdependence. North had placed cotton exports at the heart of his explanation of American economic development; Fishlow, using data for receipts from the West at New Orleans, disputed the importance of West-South trade that his scheme presumes. In Fishlow's framework, the growing East-West interdependence between agricultural and industrial markets was far more significant than any West-South connection.⁴¹

With the lines thus drawn, several researchers entered the arena. Perhaps not unexpectedly, given American economic historians' fascination with the South, the work focused initially on that region, but the implications for northern agriculture remained clear. Generally, all have confirmed the position of a weak southern-western trade dependence, but a strengthening trade relationship between Midwest and East. Robert Gallman, focusing upon southern food production, found little southern need for food imported from the Middle West;

William Hutchinson and Samuel Williamson also discovered minimal reliance among southerners on western foodstuffs. In her study of interregional grain trade, Diane Lindstrom reached a similar conclusion. Lawrence Herbst's research on North-South commodity trade further weakens the traditional, long-standing hypothesis of major regional specialization in the nineteenth-century United States.⁴²

There have also been studies concerned more directly with northern agriculture. Fisher and Temin's papers on wheat supplies (cited above) reflect upon aspects of regional specialization after the Civil War as does John C Clark's book on the western grain trade. More recently, Colleen Callahan and William Hutchinson have examined interregional trade from the western perspective, finding an East-West food exchange link but, like most others, no notable southern demand for western agricultural commodities.⁴³

Despite the strong American comparative advantage in agriculture that has existed historically, and endures today, compared with the debate regarding interregional trade, surprising little attention has been directed recently toward northern agricultural participation in international markets.

⁴² Robert Gallman, 'Self-Sufficiency of the Cotton Economy of the Antebellum South', *Ag Hist*, XLIV, Jan 1970, pp 5-24; William K Hutchinson and Samuel H Williamson, 'The Self-Sufficiency of the Antebellum South: Estimates of the Food Supply', *Jour Econ Hist*, XXXI, Sept 1971, pp 591-609; Diane Lindstrom, 'Southern Dependence Upon Interregional Grain Supplies: A Review of the Trade Flows', *Ag Hist*, XLIV, Jan 1970, pp 101-14; Lawrence A Herbst, 'Interregional Commodity Trade from the North to South, and American Economic Development in the Antebellum Period', *Jour Econ Hist*, XXXV, March 1975, pp 264-70.

⁴³ Fisher and Temin, op cit; John G Clark, *The Grain Trade in the Old Northwest*, Urbana, Univ Illinois Press, 1966, and 'The Antebellum Grain Trade of New Orleans: Changing Patterns in the Relation of New Orleans with the Old Northwest', *Ag Hist*, XXXVIII, July 1964, pp 131-42; Colleen Callahan and William K Hutchinson, 'Antebellum Interregional Trade in Agricultural Goods: Preliminary Results', *Jour Econ Hist*, XL, March 1980, pp 25-31. Those interested in trade patterns within a smaller area should see James Mak, 'Interregional Trade in the Antebellum West: Ohio, A Case Study', *Ag Hist*, XLVI, Oct 1972, pp 489-97. For a measurement of the potential surplus and revenue in northern dairying, see Fred Bateman, 'The "Marketable Surplus" in Northern Dairy Farming: New Evidence by Size of Farm in 1860', *Ag Hist*, 52, July 1978, pp 345-63, which indicates a reasonably large potential for surplus sales in the East, but relatively little in midwestern states in 1860.

⁴¹ Douglass C North, *The Economic Growth of the United States, 1790-1860*, Englewood Cliffs, NJ, Prentice-Hall, 1961; Albert Fishlow, 'Antebellum Interregional Trade Reconsidered', *American Econ Rev*, LIV, May 1961, pp 352-64. See also Richard Easterlin's review of North's book in *Jour Econ Hist*, XXII, March 1962, pp 122-26, and the review of the debate in Susan Previant Lee and Peter Passell, *A New Economic View of American History*, New York and London, W W Norton and Co, 1979, ch 7.

Morton Rothstein fortunately has continued his interest in American export of agricultural goods, particularly with reference to trade relationships between Great Britain and the United States during the last half of the nineteenth century. His research provides an extremely useful perspective on this important aspect of America's foreign trade in agricultural goods during this period of national development. William David Zimmerman's study of the export trade in livestock between these two countries complements this work, as does Harry D Fornari's historical survey pieces on American grain exports. Western agricultural trade on the Erie Canal link that played a major role in the Northeast-Midwest trade is discussed well in Robert Shaw's *Erie Water West*.⁴⁴

As the magnitude of commercial agricultural production and trade grew, so did the need for improved marketing mechanisms. Rothstein's article on wheat and cotton exports (cited above) compares marketing arrangements for these crops; Thomas Olde has reviewed the evolving co-operative efforts among grain merchants in the Great Lakes region as they struggled to deal with the marketing of that product during the last century; Norman Crockett has investigated wool marketing procedures. Although most such studies concern nineteenth-century practices, John Schlebecker's investigation of agricultural marketing in the 1774-77 period provides some clues to an earlier time. Among individual farm products, dairying continues to concern writers with an interest in

marketing, such as H E Erdmar, in his examination of the 'associated dairies' of New York, H S Irwin, who investigated butter marketing in Chicago and Roy Ashmen, who studied butter price determination by the Elgin, New York Board of Trade.⁴⁵

Other Issues in Northern Agriculture

Although the subjects examined above dominated the literature, as concerns of scholars interested in northern agricultural history, other topics appeared with some frequency. Agricultural education was among the more prominently studied over the past twenty years as it had been for decades before. The history of agricultural education in the United States is a fascinating one, involving the enactment of such public policy legislation as the Morrill and Hatch Acts, the land-grant colleges, the experiment stations, agricultural institutes, county agents and extension services. In an agricultural economy as geographically dispersed, and as diverse in soil types and terrain, a system of education that stressed local conditions and reached out to the practising farmer came to play a major role in the diffusion of knowledge regarding agricultural production. As the more subtle aspects of scientific farming evolved, the educational and research process became even more significant in overcoming resistance or apathy to newly-developed ideas.

⁴⁴ Morton Rothstein, 'America in the International Rivalry for the British Wheat Market, 1860-1914', *Mississippi Valley Historical Review*, XLVII, Dec 1960, pp 401-18; 'The American West and Foreign Markets, 1850-1900', in David M Ellis (ed), *The Frontier in American Development*, Ithaca, Cornell Univ Press, 1969, pp 381-406, and 'Antebellum Wheat and Cotton Exports: Contrast in Marketing Organization and Economic Development', *Ag Hist*, XL, April 1966, pp 91-100. William David Zimmerman, 'Live Cattle Export Trade Between the United States and Great Britain, 1868-1885', *Ag Hist*, XXXVI, Jan 1962, pp 46-52; Harry D Fornari, *Bread Upon the Waters: A History of U.S. Grain Exports*, Nashville and London, Aurora Publishers, 1973, and 'U.S. Grain Exports: A Bicentennial Overview', *Ag Hist*, 50, Jan 1976, pp 137-50; Ronald Shaw, *Erie Water West*, Lexington, Univ Kentucky Press, 1966.

⁴⁵ Rothstein, *op cit*; Thomas Odle, 'Entrepreneurial Cooperation on the Great Lakes: The Origin of the Methods of American Grain Marketing', *Business History Review*, XXXVIII, Winter 1964, pp 439-55; Norman Crockett, 'The Marketing of Wool in the Nineteenth Century: The Case of the Middle West', *Ag Hist*, XLII, Oct 1964, pp 315-26; John Schlebecker, 'Agricultural Markets and Marketing in the North, 1774-1777', *Ag Hist*, 50, Jan 1976, pp 21-36; H E Erdman, 'The "Associated Dairies" of New York as Precursors of American Agricultural Cooperation', *Ag Hist*, XXXVI, April 1962, pp 82-90; H S Irwin, 'Some Early Chicago Butter Marketing Practices', *Ag Hist*, 35, July 1961, p 82-4; Roy Ashmen, 'Price Discrimination in the Butter Market: The Elgin Board of Trade, 1872-1917', *Ag Hist*, XXXV, July 1961, pp 156-62. On related topics, see 'The Business Economy of Marketing Change, 1790-1840: A Study of Sources of Efficiency', *Ag Hist*, XLVI, Jan 1972, pp 211-26, and Dale E Trevelen, 'Railroads, Elevators and Grain Dealers: The Genesis of Antimonopolism in Milwaukee', *Wisconsin Magazine of History*, 52, Spring 1969, p 205-22.

The literature produced by the state experiment stations was prodigious, providing nineteenth-century farmers with abundant, detailed information on new techniques, plant cultivation, livestock husbandry, and other aspects of agrarian knowledge as applied to local conditions. Not only were the agricultural colleges and experiment station personnel developing new techniques and adaptations of existing ones, they were also instrumental in their diffusion into the oftentimes sceptical farm community.

The most comprehensive recent survey of the extension system is presented in Roy V Scott's *The Reluctant Farmer: The Rise of Agricultural Extension to 1914*. In it he discusses the stimulative effects of the era of agricultural discontent on farmer education, the emergence of the institute movement, demonstration work and the role of the county agent. The volume contains a thorough bibliography including references to Scott's other work on agricultural education in Missouri, Minnesota and Illinois. Allied with the experiment station activity, the colleges of agriculture and their related institutions of higher learning, the land-grant colleges, also played a major role in agricultural research and teaching. Several studies place this topic within a broad context, among them Paul E Waggoner's overview of American agricultural education and research, Wilson Smith's review of education's social history and Mary Jean Bowman's economic analysis of the land-grant colleges' contribution to developing human resources. State or regional variations in the pursuit and development of formal agricultural education can be seen in research on such states as New York, Minnesota, Maryland, and Illinois.⁴⁶

⁴⁶ Roy V Scott, *The Reluctant Farmer: The Rise of Agricultural Extension to 1914*, Urbana, Univ Illinois Press, 1970; Paul E Waggoner, 'Research and Education in American Agriculture', *Ag Hist*, 50, Jan 1976, pp 230-47; Wilson Smith, "'Cow College' Mythology and Social History: A View of Some Centennial Literature', *Ag Hist*, XLIV, July 1970, pp 299-310; Mary Jean Bowman, 'The Land-Grant Colleges and Universities in Human Resource Development', *Jour Econ Hist*, XXII, Dec 1962, pp 523-46. For work on individual states, see Donald B Marti, 'The

Beyond issues of education, there have been several studies of labour in northern agriculture, although not to an extent approaching that for southern workers. David E Schob's *Hired Hands and Plowboys: Farm Labor in the Midwest, 1815-1860*, provides a wide-ranging survey of labour on northern farms. On specific tasks such as land-clearing or capital-building, the works of Martin Primack and of Schob are useful; on the aggregate level research on the rural and urban labour force by Thomas Weiss, and by Weiss and Ermisch, are revealing of broad trends. Edith Lang, Theodore Saloutos and Frank Lewis have provided new insights into migration and mobility in the agricultural sector. And within the past few years, increased attention has been paid to the long-neglected study of the role of women in the farm labour supply and in farm operations generally.⁴⁷

Another area of continuing research among agricultural historians has been

Purposes of Agricultural Education: Ideas and Projects in New York State, 1819-1865', *Ag Hist*, XLV, Oct 1971, pp 271-84; Roy V Scott, 'Early Agricultural Education in Minnesota: The Institute Phase', *Ag Hist*, XXXVII, Jan 1963, pp 21-34; Vivian Wiser, 'Maryland in the Early Land-Grant College Movement', *Ag Hist*, XXXVI, Oct 1962, pp 194-9; Gould P Colman, 'Pioneering in Agricultural Education: Cornell University, 1867-1890', *Ag Hist*, XXXVI, Oct 1962, pp 200-6. Richard Gordon Moore provides a history of a major college of agriculture in *Fields of Rich Toil: The Development of the University of Illinois College of Agriculture*, Urbana, Univ Illinois Press, 1970.

⁴⁷ David E Schob, *Hired Hands and Plowboys: Farm Labor in the Midwest, 1815-1860*, Urbana, Univ Illinois Press, 1975; see also his 'Sodbusting on the Upper Midwestern Frontier, 1820-1860', *Ag Hist*, XLVII, Jan 1973, pp 47-56; Martin Primack, op cit, Thomas Weiss, 'The Industrial Distribution of the Urban and Rural Workforces: Estimates for the United States, 1870-1910', *Jour Econ Hist*, XXXII, Dec 1972, pp 919-37 and John Ermisch and Thomas Weiss, 'The Impact of the Rural Market on the Growth of the Urban Workforce, U.S., 1870-1900', *Explorations in Economic History*, 11, Winter 1973/74, pp 137-53; Edith Lang, 'The Effects of Net Interregional Migration on Agricultural Income Growth: The United States, 1850-1860', *Jour Econ Hist*, 32, March 1972, pp 393-5; Theodore Saloutos, 'The Immigrant Contribution to American Agriculture', *Ag Hist*, 50, Jan 1976, pp 45-67; Frank Lewis, 'Exploring Rural Emigration in the United States: 1869-1899; Partial and General Equilibrium Approaches to Determining the Impact of Productivity Change on the Direction of Labor Migration', MSSB Workshop paper, Madison, Wisconsin, 1972. On the contribution of women to the agricultural enterprise, see Mary W M Hargreaves, 'Women in the Agricultural Settlement of the Northern Plains'; Gladys L Baker, 'Women in the United States Department of Agriculture'; Minnie Miller Brown, 'Black Women in American Agriculture', all in *Ag Hist*, 50, 1976, pp 179-89, 190-201 and 202-12 respectively; Donald B Marti, 'Women's Work in the Grange: Mary Ann Mayo of Michigan, 1882-1903', *Ag Hist*, 56, April 1982.

livestock husbandry and, to a lesser extent, plant cultivation. Among the books devoted to livestock are Eric Lampard's *The Rise of the Dairy Industry in Wisconsin*, and Paul Henlein's *The Cattle Kingdom in the Ohio Valley, 1783-1860*. There have also been articles on sheep husbandry, dairy agriculture and animal science that extend our understanding of this branch of the agricultural enterprise as it grew in importance through the nineteenth century and into the twentieth.⁴⁸

Finally, over the period covered by this bibliographic review, we have gained a new understanding of the broad aggregates of northern agriculture through the work of Robert Gallman, Richard Easterlin, Wayne Rasmussen, and others. By now, most of their statistical work appears in the standard reference work, *Historical Statistics of the United States*, and in textbooks in economic history.⁴⁹ These data, and the analysis that frequently accompanies them, have filled major gaps in measurement of farm production, income, revenues, investment, and yields that still existed twenty years ago.

Conclusion

While the hopes expressed by Louis B Schmidt and others for expanding scholarly interest in American agricultural history have been realized, the more recent calls for a methodological transformation remained unanswered. There still is no unifying

theme, no general theoretical framework, no dominant methodology and no central school of thought. There has been no 'revolution' as occurred in American economic history nor any serious battle lines drawn between old and new practitioners. Yet, as this report on the past two decades reveals, the field is alive and well. Old issues have gained added dimensions, traditional interpretations of events have been challenged, and new questions posed. To an extent exceeding that in business or labour history, there have been incursions by the more general economic historians, the economists and the cliometricians into an area of scholarly investigation traditionally dominated by historians. A similar review of research and publication for the 1940-60 period would no doubt reveal less diversity, at least of methodology, than did this one. Any ultimate judgement on the merits of this turn of events should remain with the reader.

A fruitful way to evaluate the overall thrust of research in northern agricultural history is to reflect upon what has *not* been done over these twenty years. Consider first the relative lack of intensity in scholarly debate on issues regarding northern agriculture as compared with southern. Antebellum northern farming lacks the central feature of slavery, and postbellum northern agriculture, even in the midwestern heartland, must compete for academic interest with the industrial development that occurred so dramatically in the North. Throughout the nineteenth century only the phenomenon of 'agrarian unrest' competes in emotional intensity with such grand issues in American economic history as slavery or the rise of corporate 'big business'. The subject of agrarian discontent continues, after all that has been written in previous debates, to be one of the dominant research topics in this field. Otherwise, the pool of issues in the history of agriculture for the northern United States remains a relatively calm one.

Despite the persistence of potentially

⁴⁸ Eric E Lampard, *The Rise of the Dairy Industry in Wisconsin: A Study in Agricultural Change, 1820-1920*, Madison, State Historical Society of Wisconsin, 1963; Paul C Henlein, *The Cattle Kingdom in the Ohio Valley, 1783-1860*, Lexington, Univ Kentucky, 1959. John Stover, 'Early Sheep Husbandry in Ohio', *Ag Hist*, XXXVI, April 1962, pp 101-7; T C Byerly, 'Changes in Animal Science', *Ag Hist*, 50, Jan 1976, pp 259-74; Fred Bateman, *op cit* (see footnotes 32 and 43).

⁴⁹ Robert Gallman, *op cit*, and 'A Note on the Patent Office Crop Estimates, 1841-1848', *Jour Econ Hist*, XXIII, June 1963, pp 185-95; Richard Easterlin, 'Farm Production and Income in Old and New Areas at Mid-Century', in Klingaman and Vedder, *op cit*, pp 77-117; Marvin W Towne and Wayne D Rasmussen, 'Farm Gross Product and Gross Investment in the Nineteenth Century', in National Bureau of Economic Research, *Trends in the American Economy in the Nineteenth Century*, Studies in Income and Wealth, Vol 24, Princeton, Princeton Univ Press, 1960, pp 255-312.

significant economic issues, with the exceptions seen above, the cliometricians generally have remained clear of this area. When Jeremy Atack and I undertook an investigation of northern agricultural profitability, for example, we found little on which to build.⁵⁰ While the profitability of slavery and southern agriculture had been argued almost *ad nauseum*, the rate of return earned in the northern agricultural system against which it was implicitly being compared was simply assumed to be a competitively determined one. Unlike the more systematic measurement of profit in slave agriculture, most reports on northern farm returns came from scattered examples that were of questionable statistical representativeness of the entire northern farm economy. Although Clarence Danhof has contributed to this area by presenting less aggregated estimates of farm profitability, generally little else has been done on a topic that is important not only to understanding the development of northern farming, but to evaluating resource allocation throughout the American economy during a period of profound economic transformation.⁵¹

The nexus between agriculture and manufacturing during the early years of industrialization also remains unexplored, even for the most obvious relationships. The two activities were joined by supply conditions

such as labour or capital, and through demand, yet a study that probes these interactions has yet to appear. Similarly, the role played by farmers in the industrial investment process remains unclear. Although there have been hypotheses, and even tentative explanations, regarding the possible over-allocation of resources to agriculture in the nineteenth-century United States, the phenomenon awaits serious, systematic analysis by economists and historians.

Other questions that seem ripe for research involve wealth and income distribution in the agricultural North during the pre-Civil War era and afterward, the market structure of nineteenth-century agriculture, the history of northern agricultural labour, investment and risk-taking behaviour among northern farmers, and the economic effects of twentieth-century public policies on the composition, organization and performance of the farm sector.⁵² The functioning of agriculture as a business enterprise similarly merits serious scholarly study.⁵³

Many of the questions that demand investigation call for the skills of scholars from several disciplines, among them not just agricultural historians or even general historians, but economists, geographers, sociologists, and individuals from such business fields as accounting or finance. While it is no doubt fanciful to hope for a grand interdisciplinary movement into the field of northern agricultural history, the

⁵⁰ Fred Bateman and Jeremy Atack, 'The Profitability of Northern Agriculture in 1860', in Paul Uselding (ed), *Research in Economic History*, IV, July 1979, pp 87-125. The rates of return were calculated for the Northeast and Middle West using a formula comparable to that previously used for southern agriculture profitability. Among other results, the estimates indicate a rate of return in northern agriculture that is low relative to rates in manufacturing or transport enterprises, but comparable to that being earned in southern agriculture.

⁵¹ Clarence Danhof, 'The Farm Enterprise: The Northern United States, 1820-1860s', in Uselding, *ibid*, pp 126-91. In this piece, Danhof offers an intensive examination of financial accounts for 190 individual farms, combining both historical and economic perspectives. For other papers on aspects of profit see David Galenson, 'The Profitability of the Long Drive', *Ag Hist*, 51, Oct 1977, pp 737-58; Allan G Bogue and Margaret B Bogue, 'Profits' and the Frontier Land Speculator', *Jour Econ Hist*, XVII, March 1957, pp 1-24; Robert Swierenga, 'Land Speculator "Profits" Reconsidered: Central Iowa as a Test Case', *Jour Econ Hist*, XXVI, March 1966, pp 1-28, and Jonathan Lurie, 'Speculation and Profits: The Ambivalent Agrarian in the Late Nineteenth Century', *Ag Hist*, XLVI, April 1972, pp 269-78.

⁵² For a recent economic analysis of wealth distribution in the agricultural North, see Jeremy Atack and Fred Bateman, 'The "Egalitarian Ideal" and the Distribution of Wealth in the Northern Agricultural Community: A Backward Look', *Rev Economics and Statistics*, LXIII, Feb 1981, pp 124-9. A major episode in twentieth-century agricultural policy is documented in Theodore Saloutos, *The American Farmer and the New Deal*, Ames, Iowa State Univ Press, 1982.

⁵³ In his presidential address to the Business History Conference, Harold Woodman reviewed the business aspects of farming; the address is published as 'The Business of Agriculture', in Jeremy Atack (ed), *Business and Economic History*, 2nd ser, 10, Urbana, Bureau of Economic and Business Research, Univ Illinois, 1981, pp 1-12. The farmer's entrepreneurial role is investigated by Adam Ward Rome in his 'American Farmers as Entrepreneurs', *Ag Hist*, 56, April 1982, pp 37-49.

limited involvement of individuals from some of the disciplines over the past twenty years points the way, and the potential, for work that cuts across disciplines and methodologies. One can at least hope that the study of northern agriculture would gain a place on the historical agenda commensurate with that accorded southern agriculture over the years. If it did, twenty years from now a

bibliographical review could be written that might conclude that American agricultural history was closer toward the goal of becoming a more unified and structured field of research. In the process, not only would knowledge of a specific region or a single economic activity be advanced, but so would our understanding of American economic development generally.

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