BOOK REVIEWS

Industrial Market Structure and Economic Performance

By Frederick M. Scherer. Rand McNally and Company, P.O. Box 7600, Chicago 60680. 576 pages. 1970. $13.

Scherer's book is the "new bible" of market structure, conduct, and performance. It is an excellent summary of the state of the arts. The coverage of the literature is extensive, except for that of agricultural economics. I counted only two references to work by agricultural economists, except that published in general economic journals. Surely the extensive economies-of-scale studies by agricultural economists using the economic-engineering method are at least worthy of mention.

The discussion of economies of scale includes plant economies, vertical integration, technological change, market growth, the economies of multiplant operation, sales promotion, pecuniary economies, and research and development. The coverage of plant economies of scale is limited to multi-industry studies using statistical relationships between plant size and long-run unit cost for various industries, and the so-called engineering approach which utilizes questionnaires to engineering executives in various industries who estimate the minimum optimum scale. It ignores the economic-engineering techniques widely used by agricultural economists and the adaptation thereof called process analysis (i.e., linear programming) which has been used in some studies of the petroleum refining industry.

Possible scale economies—or diseconomies—in procurement and other aspects of management are ignored. This, of course, reflects the dearth of empirical investigation of these matters. It seems a reasonable hypothesis that there are considerable economies of scale in procurement, some of which at least could be quantified. On the question of management economies or diseconomies to scale, both hypotheses have their admirers. Anyone who has ever suffered with a large bureaucracy—whether it be the Army, the telephone company, or a university—can testify to considerable diseconomies of size in their operations. Whether these are offset by other, less visible economies is an interesting question. Not the least of the possible diseconomies of scale in a large corporation are those arising from the deceptions which such an organization sometimes practices upon itself through its accounting conventions. One wonders how many subsidiaries have been divested because they were losing money, when the chief problem was that the transfer prices adopted put the profits in some other portion of the corporation.

Scherer's coverage of economies of scale is an excellent example of the indication of the state of the arts which he provides to economists interested in market structure, conduct, and performance. We know something about plant economies, and a fair bit about the economies of scale in research and development (an area in which Scherer has worked and on which he provides substantial coverage); and we have some ideas about economies of scale in promotion and in financial management. On other points, economists have been largely silent.

Agricultural economists will be interested in the comment on the "peculiar rhythm" of investment caused by price-fixing schemes of German cartels (p. 319). When the price-fixing schemes were working well, outsiders were attracted into the industry, creating overcapacity. The resulting struggle for market share brought about the collapse of the cartels, prices dropped, and investment declined drastically. The analogy to supply control efforts by cooperatives will be apparent.

Scherer's treatment of product differentiation illustrates the homely truth which has too often escaped economists attempting to deal with the problems of structural analysis. He says, "the relevant question for economic analysis is not . . . whether product differentiation is a good thing, but rather, how much product differentiation there should be and whether certain market conditions might lead to excessive or inadequate differentiation" (p. 325). This statement illustrates the principle that a simple dichotomy of "good" and "bad" is inappropriate in dealing with the difficult questions of market performance. Most curves relating performance to some other characteristic are U-shaped—either inverted or upright. The optimum level is somewhere between the extremes. A clear exposition of this point should be required of all graduate students as a prerequisite to receiving the doctorate in any field relating to the analysis of market performance. At the same time, refresher courses should be required of all

present practitioners of the art, particularly those in regulatory agencies.

Alden C. Manchester

The Economy of Cities

By Jane Jacobs. Random House, 457 Madison Ave., New York 10022. 268 pages. 1969. $5.95 cloth; $1.95 paper.

Why review a book on cities? Because the first chapter, "Cities First—Rural Development Later," advances a radical, new theory as to the origins of agriculture. Mrs. Jacobs was so completely impressed with the drive and energy of cities, as the source of all technological advance throughout the history of mankind, that she extrapolated this observation backward into prehistory and concluded that the universally retarded rural types—hunters and gatherers all at that time—could not possibly have made the discoveries and the intricate combinations of facts and ideas that were necessary in the development of domesticated animals and cultivated crops—generally considered to have occurred between 9,000 and 7,000 B.C. So she postulated (1) the early development of cities as trade centers for hunting and gathering tribes, (2) the gradual development of agriculture by these cities, and (3) the ultimate ruralization of agriculture by a process of outward colonization from the cities.

The original objective was to explain the economic growth of cities—why some grow while others stagnate and decay—and this is attempted in chapters 2 through 8. To summarize more than 200 pages very briefly, cities grow when they add new work to old work—a process of innovation and development. Any settlement where the addition of new work proceeds rapidly becomes a city. However, growth and efficiency are not compatible. The success of a few large firms may bring efficiency—but also stagnation. Vigorous innovation depends on large numbers and great diversity of economic organization, so that fragmented and inefficient little industries, with much trial and error, are the best soil for city growth. What makes a city in the first place is the existence and growth of "export work"—work on products sold outside the city. An increase in such work has a multiplier effect because it induces increases in supportive enterprises. But eventually a growing city will tend to start production of goods it previously imported, and this "import replacement" has an even bigger effect because all shifted imports go to swell the local economy.

Stated thus barely, the theory may seem like circular reasoning: Cities grow because they add new work. But Mrs. Jacobs provides thorough discussion and many illustrations which transform her simple proposition into a respectable hypothesis. The theory is abundantly supported at every point by apt and stimulating illustrations drawn from all ages and many parts of the world, including the by now obligatory contrast between progressive (English) Birmingham and stagnating Manchester. And since the author obviously knows her subject thoroughly, her ideas on the origins of agriculture cannot be casually dismissed.

The reader is asked to imagine a preagricultural city, located on the Anatolian plateau of Turkey, and called New Obsidian after the hard volcanic substance assumed to be its original stock in trade. Mrs. Jacobs says there were many preagricultural cities based on trade in what were then "strategic" commodities—copper, pigments, amber, and sea shells, in addition to obsidian—and she seems to have some support among archeologists for this claim. However, obsidian was the most important industrial material traded in that part of the world because it made the sharpest cutting tools—not steel by any means, but the nearest thing to it then. Traders came to New Obsidian with the specific purpose of getting obsidian, not to get rid of something else. Consequently, they had to bring nonperishable produce of their hunting territories, which would be hard seeds and live animals—trussed and carried, or hobbled and driven.

The large flow of these commodities into the city would require specialists in their protection, storage, and distribution. Considerable judgment would be required in managing the inventory of live animals. First to be killed would be those animals, including most carnivores, that are hardest to feed or troublesome to manage. Animals that can live on grass would be "removed last from the natural refrigerator of life." And females, "being less rambunctious," would be kept longest, with the result that sometimes they would give birth before they had been slaughtered. The animal stewards would naturally save these docile breeders whenever they could. Perhaps sheep would become animals of choice because their meat was liked as well as any and their pelts were highly valued. Domestication would follow inevitably, however slowly.

The seed stewards, on the other hand, would have no reason to play favorites. Seeds would be mingled in storage and eaten as mixtures. Some seeds would be sown, deliberately in wild patches for convenience, through accidental spilling, or by rats, mice, and birds. Since the seeds would come from many and widely scattered areas, the plants would naturally cross in

unprecendented combinations—which would not go unobserved by the seed stewards. In fact, the inevitable crosses and hybrids would be seen by experts, well aware that some of the resulting "city seeds" were new. The better yielding varieties would naturally be preferred and selected. Nevertheless, it would take many generations—of people as well as of wheat and barley—to bring about the earliest cultivated grains. When agriculture had thus been developed in the city, why should it be transplanted to rural areas? The most likely reason, according to Mrs. Jacobs, would be the need for more space to pasture herds of animals. Thus, agricultural villages may have been set up, in a kind of colonization from the city, to handle part of the city's work.

Mrs. Jacobs thinks that the "current dogma of agricultural primacy" derives from pre-Darwinian thinking—more specifically from Adam Smith, who was professor of "moral philosophy" and believed, as did all educated men of his time, that the world was created in 6 days about 5,000 B.C. and that man was born into a "garden." For Adam Smith, therefore, agriculture was "given," men earned their bread by the sweat of their brows, and the only possible question was: How did commerce and industry arise upon an agricultural base? This was the right question for that time because there was no contrary evidence. But the question has unfortunately remained unchanged despite drastic alteration in both the available evidence and man's thinking on other fundamental questions.

For contrast with this theory, let us now review briefly the orthodox explanation of agricultural origins. This account is abstracted primarily from two publications: (1) "Climate, Man and History" by Robert Claiborne (W. W. Norton & Co., New York, 1970), and (2) "Valley to Valley, Country to Country" by Wayne D. Rasmussen (1964 Yearbook of Agriculture, pp. 1-11). Incidentally, the latter says that "civilization began when man planted his first seed and tamed his first animal" (p. 1), whereas the former says that the invention of agriculture resulted in a "transition from savagery to barbarism" (p. 238), with "civilization" and cities coming later—together.

The generally accepted theory argues that agriculture developed first in the Middle East—probably in Mesopotamia, or present-day Iraq—and that the transition was directly from a hunting and gathering life to agriculture, facilitated by a variety of climatic zones in a small area. With the relatively short distance of 150 miles required for migration from one zone to another, men followed the game from winter to summer pasture and back again as the seasons varied, taking advantage en route of the different growing seasons for plants at different altitudes, and taking only a month to 6 weeks for the journey each way. Thus, Mesopotamian man was much less of a wanderer than previous hunting and gathering tribes. Moving more slowly, he could carry more equipment and become more knowledgeable of the different localities, the result being that an incredibly varied diet was available to the hunter-collector who knew which plants and animals were available in each season in each environmental zone.

Animal husbandry probably developed when man succeeded in taming animals that had been wounded or driven into enclosures for slaughter, but it is also likely that the very human impulse to acquire pets was an important factor, and that the women of the tribe saved and tamed very young animals. Some recently acquired knowledge may be an important factor in understanding the early domestication of animals. Many young animals undergo a process known as "imprinting," by which they become attached to the first moving object with which they come in continuous contact. It is possible, therefore, that the original domestication of animals was not nearly as difficult as was previously thought, requiring only the initial impulse to save the very young. It would certainly have taken no great stroke of genius for hunters and their women, most probably the latter, to note the utility of having one's food supply hanging around the camp.

Wild wheat and barley will flourish over fairly wide environmental conditions provided only that the soil has been disturbed. Since man stored grain, seeds, and nuts even in his hunting and gathering stage, it was inevitable that accidental seeding—on the midden, or garbage heap, or on loose earth where children had been digging—would have occurred rather frequently. By spring, time to move up country again, the seeds would have sprouted and grown into wheat, which some thrifty "hutwife" would have gathered to supplement the family rations on the march. Since "man the hunter" left the gathering chores to women, it is quite likely that some primitive woman was the first to note the possibility and desirability of deliberately planting crops.

In any case, it would not have been long thereafter before the ground would be dug and seeds dropped deliberately, and a small plot may even have been left at each halting place for gathering on the return journey. In this connection, it is noteworthy that a pointed stick, the "digging stick," was the last tool of the food gatherer and the first tool of the farmer—for that which had been used to grub for roots also served to dig holes for seeds. The next step was for part of the tribe to settle down in a permanent camp, with the women, children, and old men staying put and cultivating wheat, barley, and eventually other crops, while the boys and younger men drove the tribal herds of sheep each spring up to the summer pastures, returning in the fall to the milder lowland climate—and probably to a festive tribal reunion.

It is likely that the mere moving of food plants would begin their improvement. For example, in wild wheat and barley the seeds are most commonly scattered widely from a dry and brittle rachis (stem). This would be a biological advantage, but a real nuisance to prehistoric reapers who would lose much of the grain in the process of harvesting it. In every field, however, there are likely to be a few mutants whose rachises are much tougher. This variation cannot spread under natural conditions, but it would be *preferred* by the primitive reapers, and it would not take many "biased" transfers of this sort to arrive at a new strain. This kind of fortuitous plant improvement may have gone on gradually for a long time, but eventually man would have learned to do by design what he had first done by accident. Thus, the crossing and hybridization of plants, which Mrs. Jacobs emphasizes as requiring a "city" environment, could have been started by accidental selection and continued by deliberate choice. All that was really required was the mixed storage of grains and seeds, the accidental sowing of these seeds, and some time and curiosity to observe the results.

What are we as agricultural economists to make of these two contradictory theories? First, we should note that there is no evidence constituting irrefutable proof on either side of the question, despite long and hitherto unquestioned acceptance of the primacy of agriculture. There is too much that is still unknown for dogmatism or closed minds on either side.

Recent studies on agricultural origins have been concerned with even more basic questions than that of agricultural primacy, a good example being "Agricultural Origins: Centers and Noncenters" by Jack R. Harlan (Science 174: 468-473, Oct. 29, 1971). This study was concerned with the question as to whether agriculture was originally discovered in small areas, called "centers," from which knowledge was gradually spread throughout the inhabited world, or whether discovery was more diffuse, occurring independently in many scattered areas. Harlan's conclusion was that there were three independent "centers" in temperate zones—(1) the Middle East, (2) North China, and (3) Central America—but that each of these seems to have been associated with a much larger and tropical "noncenter" to the south—(1) equatorial Africa, (2) Indo-China and Indonesia, and (3) large areas of South America. Geographical origins of cultivated plants were the basis for this study.

Thus, in considering the two conflicting theories, we must weigh one plausible but unsupported story against another. Mrs. Jacobs' notion that extensive trade routes existed before agriculture had been developed may take some getting used to. However, she is fairly convincing on this score, and if it is accepted the rest of her thesis follows quite logically—as a *possibility*. But there is a rule of thumb applied in the physical sciences, namely, that the simpler of two equally plausible theories should be accepted until it is proven wrong. And the orthodox theory as to agricultural origins is certainly simpler as well as older than Mrs. Jacobs' explanation.

There is also a more important reason for agricultural economists to look askance at the new theory. Most contemporary agricultural economics that is truly relevant is concerned, in one way or another, with the improvement of the lot of farmers in relation to their city cousins. The relative disadvantages of agriculture have been evident for many centuries, and it has been comforting, to some of us at least, to be able to look back on a time, 10,000 years ago, when agriculture was the "wave of the future"—when it had all the built-in income incentives now associated with nonagricultural occupations. Mrs. Jacobs would have it that agriculture has *always* been subordinate and subservient to cities, an idea which, if accepted, would be most subversive of our professional self-esteem.

Ernest W. Grove

Migrant: Agricultural Workers in America's Northeast

By William H. Friedland and Dorothy Nelkin. Holt, Rinehart and Winston, 383 Madison Ave., New York 10017. 281 pages. 1971. $2.25 (paperback).

Migratory wageworkers have always represented a significant part of the larger problem of rural poverty. Yet, compared with other disadvantaged groups, relatively few in-depth studies have been made of a class of people so plagued by a life style of deprivation. This has always been a difficult group to study. Many of the more traditional data collection techniques, such as the sample survey, are logistically difficult to handle when applied to a continuously changing population which is culturally isolated and educationally deprived. The method described by the authors is a refreshing departure from some of these more conventional techniques.

The authors, who are sociologists experienced in community studies, have applied their skills to this problem and as a result have produced a set of salient themes about the behavior of migrant laborers that are both profound and practical. The method of participant-observation was employed as the basic data collection technique. Observers kept field diaries which

they later transcribed on tape. Data were obtained during the summers of 1966-68 by students of Cornell University and Tuskegee Institute who lived individually in labor camps and worked in the field with a crew. As a result, much firsthand insight about the subtle ways in which people adjust their individual life styles to a generally stressful and coercive system was obtained.

Some researchers who are in the habit of confining themselves to a rather rigid way of approaching problem solutions will not like this book. Also, if the reader is interested in a statistically based study or in a mathematical model of migrant labor problems, he will not find it in this work. I like the book because it is rich in anecdotal impressions which are honest descriptions, factual and intellectually defensible. While the study makes no direct assertions concerning causes, the overall accumulation of evidence presented from different perspectives and points of view logically suggests that there is a syndrome of factors which act to reinforce and maintain the migrant labor problem as a social system.

The book is organized into 11 chapters, each with a summary discussion. Topics covered include environmental conditions of camp life, work relations with crew leaders, interpersonal relations, transactions with people in the outside world, and the behavior and treatment of children. An appendix discusses outsiders in the system, which includes a network of Government and private agencies which have been established to meet migrant workers' needs.

Some aspects of the study raise legitimate questions concerning the validity and reliability of the information obtained. Participant-observation studies, wherever they are carried out, always raise problems of perceptual bias, control, and "objectivity." The present investigation is no exception. In the present study, certain methodological field procedures were followed to minimize many problems of perceptual bias. However, 12 out of the total of 16 observers were whites engaged in the study of an exclusively black segment of the migrant population. From a strictly methodological point of view, we can never be sure as to the contamination effect of this racial difference, despite the fact that the observers were outwardly accepted by their work groups. However, such data collection problems are minimal when judged against the rich background of information obtained. I highly recommend this book for all people concerned with the problems of this chronically disadvantaged element of rural America.

John L. McCoy

The Nation's Environment: Problems and Action

By Environmental Quality Forum, Research Advisory Council. East Tennessee State University, Johnson City, Tenn. 37601. 99 pages. 1971. $2.50.

Mankind is in the unique historical position of being the object of three crucial threats: The nuclear bomb, the population bomb, and the environmental bomb. This book is a collection of useful writings which highlight the problems associated with our environment and which stress the need for action to offset an impending crisis.

The papers were delivered at the Environmental Forum conducted in April 1970 on the campus of East Tennessee State University, and are concerned with a wide range of environmental issues.

It is fundamental that, before any concerted effort can be made by society to resolve a universal problem, the public must recognize the severity of the problem. Although everyone is conscious that the quality of our environment has been declining over the years, there are very few persons today who are knowledgeable as to the seriousness of the problem. As an example, one shocking fact which is not generally known is, as stated by John J. Hanlon, that during approximately the last 30 years, an estimated one mammalian species each year has become extinct due to man's abuse of the earth's ecosystem.

To be sure, the sad situation of the environment is not entirely the product of man's neglect and irresponsibility; there is also the problem of insufficient knowledge about ecology. Efforts are being made by Government agencies to resolve the problems; however, the attempts have been on a problem-to-problem basis, and have often been confined to the narrowly restricted area of concern of each particular agency. Each specialized agency views a problem in its own area of responsibility, and devises narrow solutions consistent with these special interests. Frequently the approaches of one are directly contrary to those being implemented by others. The result of the divergent approaches will be a cost to our Nation of an estimated $100 billion to clean up pollution in just the next 5 years.

One must recognize that one of the biggest obstacles to improving our environment is lack of knowledge about the factors that act upon organisms and the ecological community. No one can foretell whether or not technology or development methods will have a favorable impact on our environment. This of course compounds the dilemma, and leaves no doubt that the resolution of the problems will not be easy. It will call for drastic social and economic measures, with a high price tag; nevertheless it is a price that must be paid or

there will be no survival with a quality of life that we all want.

The writings mention many important aspects of the environmental problems; however, this reviewer wishes the writers had noted more concrete resolutions to the problems.

Jack Ben-Rubin

Desalting Technology for Middle Eastern Agriculture: An Economic Case

By Jerome J. Fried and Milton C. Edlund. Praeger Publishers, 111 Fourth Ave., New York 10003. 132 pages. 1971. $12.50.

The possibility of desalination—particularly in Egypt—is the subject of this book. The first of eight chapters deals with the problems and prospects of desalination as a technology. The second and third chapters investigate the present technological possibilities for desalting water; the energy and capital costs involved; and the advantages and disadvantages of the fossil (conventional fuel) system compared with the nuclear powered system. In the next three chapters, which address the Egyptian situation, the authors discuss why they believe Egypt presents a good opportunity for undertaking desalination. The last two chapters deal with the implications of the Middle East for other nations and present some conclusions.

A brief but careful review of the Egyptian economic situation dating back to the early 1950's is given. Included are charts and analyses of production growth. Estimates to justify the building of desalination plants in terms of water use and energy output potential are presented.

The authors make a point of calculating the greatest cost with the least returns to note precisely the real possibilities of desalination in Egypt. Estimates show results that could occur under different circumstances. Margins of probability are estimated to prevent too many miscalculations and thereby too many surprises.

Egypt, say the authors, is ripe for desalination. They propose a massive program which would cost between $700 and $900 million over a 10-year period. They propose four plants, each one independent. This means that the program need not be fully implemented but could be put into operation following construction of one to four plants.

The choice of Egypt seems a good one. Yet, as the authors state, certain circumstances must be met before such an undertaking can proceed. For example, an increased rate of savings is needed. Although the government has not been able to achieve this, the authors claim it can be done with a little greater effort. Second, they point out that the agricultural situation beyond the late 1970's is somewhat uncertain, especially for the time after the full potential of the Aswan Dam is reached.

Throughout, the authors express an optimistic attitude about the Egyptian and the Middle East situation. They recognize that Egypt continues to suffer large trade deficits and state that these can be expected at least until 1985. Yet, they say, "these deficits will be financed by foreign exchange earnings from services to foreigners, largely tourism, and transit of the Suez Canal, as well as by foreign capital inflows." Of these items, one certainly earns no revenue; the Suez Canal is still not operating and probably will not for quite a while. Even if it were opened, many of the new oil-carrying supertankers would not be able to cross it. In addition, the new oil pipeline in Israel, as well as the one under construction in Egypt, will decrease further the importance and potential revenue from the canal.

In addition to the poor foreign exchange position and deficit trade situation, Egypt faces a high rate of population increase compared with a low rate of agricultural growth. USDA indexes show Egyptian agricultural growth at only 2.4 percent for the decade of the 1960's and per capita agricultural growth at only 0.2 percent—not up to standard, and not encouraging for the future gains wanted by the authors.

The authors, it should be said, do not try to "sell" their proposal. Rather, they present a case study of possibilities—of an idea, a challenge, a hope. But it seems to this reviewer that for now, there are too many "ifs" and "buts" in the way of desalting programs in Egypt. The undertaking, as proposed, depends too much on events which need to take place before or during various implementation stages. Too many aspects of too many things need to fall into line, or come up to standard, or reach a certain rate; should they not, success of this project would be questionable.

Desalination may be the wave of the future. Certainly, it is advancing from day to day. As the authors point out, desalting water has applicability in other countries in the Middle East (Israel, Saudi Arabia, and other Arab countries) where agriculture is at the mercy of the weather. Israel is using desalinated water in its southernmost city, Eilat, but not for agricultural purposes. The book ends with two appendixes, one giving greater detail on costs of desalination and the other addressing performance and rates of return of various possible technologies.

There is little doubt that desalination for Egypt deserves close scrutiny. The possible benefits of a successful undertaking would be a badly needed addition to the food and fiber of Egypt, with 250,000 acres of irrigated land brought under cultivation in the northern part of the country. This undertaking would provide a new source for rural employment, add to the country's infrastructure, provide a base for industrial expansion, strengthen rural markets, and increase what is now an extremely limited arable land area in an agriculturally deficient country. Large areas could be farmed productively all year round with a continuous supply of water.

In view of the potential benefits, the authors have good reason to state that "it is essential to look beyond currently restricted horizons. Whether crisis is endemic to the Middle East may depend, in part, on the possibilities of working out constructive and cooperative approaches to the region's long-term development problems."

Careful consideration of this study would be a good beginning toward that goal.

Michael E. Kurtzig

Brazilian Agricultural Technology and Trade: A Study of Five Commodities

By Peter T. Knight. Praeger Publishers, 111 Fourth Avenue, New York 10003. 223 pages. 1971. $15.

As background to this book, it is important to note that Brazil has made great strides in its economic development during the last few years. Since 1968, the annual rate of GNP growth has not fallen below 9 percent. Growth of the agricultural sector has been more modest. Brazil's rapid growth has been spurred in part by the growth of exports other than coffee. While the dollar value of total exports more than doubled between 1960 and 1970, coffee's share of the total dropped from 56 percent to 36 percent.

Since the early 1960's, coffee's share of Brazil's agricultural production declined while the shares of livestock products, wheat, soybeans, and corn increased. Between 1965 and 1971, production of beef increased by 22 percent; corn by 11 percent; soybeans increased five times, from 523,000 to 2.1 million metric tons; and wheat production grew from 250,000 to 2 million tons. Brazil is now the world's second largest producer of corn, third producer of soybeans, and fifth producer of meat. Between 1965 and 1971, Brazil's beef and corn exports doubled, and soybean and soybean product exports increased sixfold to 1.2 million tons (soybean equivalent), making Brazil the world's number 2 exporter of soybeans and products. Domestic production has substituted for imports of wheat—Brazil's major agricultural import. Wheat imports declined from a peak of 2.6 million tons in 1968 to 1.7 million tons in 1971.

Peter Knight's timely book makes a valuable contribution to our knowledge of Brazil's agricultural development and trade. He examines various production and trade problems relating to beef, rice, corn, soybeans, and wheat in Rio Grande do Sul—Brazil's southernmost state. Most of Brazil's exports of beef, rice, and soybeans originate in this state, which also produces 85 percent of Brazil's wheat and is an important producer of corn. The author attempts to answer many diverse questions, such as: What was the response of exporters to price incentives and export controls? What is the cost of Brazil's wheat expansion program? Why has productivity (yields and herd output) remained stagnant? What are the economic prospects for increasing productivity through the application of modern technology? The book is based on research done in 1968.

Because of the diverse nature of the many problems tackled, the book tends to be a little disjointed, both from chapter to chapter and within chapters. Chapters 1 and 2 are introductory. The first reviews Brazilian postwar economic problems as analyzed by others—problems of trade, balance of payments, economic growth, and the regional and sectorial disparity of Brazil's growth; and the second consists of background information on Rio Grande do Sul's agriculture. The four chapters forming the main body of the book cover, respectively, factors affecting exports, wheat production, productivity and technological change, and fertilizer use.

In the chapter on exports, exporters of beef, rice, and corn were found to have reacted strongly to price incentives (domestic/international price ratios) and to export controls. Soybean exports were dominated by the strong upward trend. The overvalued exchange rates which prevailed before 1968 had the effect of taxing exports, and public entities responsible for maintaining the domestic food supply had (and still retain) the power to place heavy restrictions on the export of certain commodities.

The chapter on wheat production examines the history of wheat production in Brazil, subsidies to producers and consumers, the cost of production in terms of domestic resources, reasons for the high cost of wheat, and arguments favoring domestic wheat production. Of major interest is the section calculating

the cost in domestic resources for producing wheat, beef, rice, soybeans, and corn in Rio Grande do Sul in 1967. Although the data used are somewhat weak, and price changes in the last year or two would be more favorable to wheat production, the calculations do show that Brazilian domestic production of wheat is a costly venture. It was estimated that domestic production of beef, rice, soybeans, and corn diverted between 82 and 87 cents' worth of domestic resources for every $1 of commodity produced, but that $2.20 of domestic resources were diverted for the production of $1 of wheat. Although the evidence on production costs indicates much inefficiency, the arguments favoring Brazilian wheat production are dismissed too rapidly. Not enough consideration is given to the potential for reducing future production costs, or to the marginal character of many of the resources used in wheat production, particularly the land (previously in extensive pasture).

In Brazil, agricultural production has been increased by bringing into production previously unexploited land. Little progress has been made in increasing yields since the late 1940's. Now that the agricultural frontier in southern Brazil is on the verge of disappearing, progress will have to be made in improving yields if agricultural growth is to continue. The chapter on productivity and technical change suggests that up to now most farmers in Rio Grande do Sul lacked sufficient knowledge and medium-term credit to realize the full potential of existing varieties of wheat, corn, and soybeans by the use of fertilizer and lime. Mechanization, however, has been very rapid.

In the chapter analyzing fertilizer use, it was estimated that wheat and rice were being fertilized closer to economically optimal levels in recent years than previously. No significant response to fertilizer nutrient-crop price ratios was found.

In summary, the book is recommended for those interested in the development of agriculture in Brazil. By concentrating on only five commodities and only one state, Knight was able to cover a wider range of topics and arrive at some more definitive conclusions than would have been possible had he tried tackling the problems he studies on a sectorwide or nationwide basis.

Edmond Missiaen

Change and Uncertainty in a Peasant Economy: The Maya Corn Farmers of Zinacantan

By Frank Cancian. Stanford University Press, Stanford 94305. 208 pages. 1972. $7.95.

The firm and its response to changing business opportunities are analyzed in this book. The firm in this case is the migrant Mexican peasant who descends into the nearby tropical forests to rent land for the slash-and-burn production of corn. The changing opportunities result from construction of penetration roads and the establishment of government buying stations in the area.

Probably every economist recognizes the necessity, every now and again, of turning from his concepts and analytical techniques to look at the real world. But, is the real world best seen through an overview, a gaze out the window, or a detailed view through a microscope? Probably some combination of these is necessary. In this day, when "experts" on any country can be found in any conversation, it may be well for some of us to put our knowledge and analysis to the microscope test. Frank Cancian's book is well adapted to do this for several reasons.

Cancian shows us economics through the eyes of an anthropologist. His portrayal of the "economic man" of a peasant culture reveals the great mass of built-in assumptions we take with us when we apply our techniques of economic analysis to developing countries. The detail of this study shows that agricultural data problems in developing countries are due not only to institutional weaknesses or lack of trained personnel; they also result from a failure to correlate basic assumptions with analytical techniques. For instance, the apparent standardization of quantitative measures in developed countries is the result of an agreed set of assumptions that make allowance for moisture content of a grain, foreign matter, variety, weight per bushel, etc. From these we make production estimates in bushels that have no known relationship to any given standards, but which generally meet the statistical needs of a modern marketing system.

The accepted assumptions in a peasant economy, on the other hand, may be no more difficult for the peasant, but much less adaptable to standardization in the commercial sense. In Zinacantan, both the "almud" for measuring grain yields and the "tablon" for measuring area seeded vary in size. The "almud" is larger where the land is more productive; the "tablon" becomes somewhat larger where the land is less productive. Cancian cites an interesting example of an attempt to impose fixed standards—in a complaint about short measure, a government official consistently measured out 4.5 liters of corn, whereas the vendor was repeatedly able to demonstrate that there were actually 5 liters in the exchange. A random test showed a shortage of 13.5 percent in the measure given by commercial vendors while farmers who retailed their own production gave an overage of 3.5 percent.

Cancian's economic analysis is as fascinating in its development as his description of the anthropological details of peasant agriculture. He finds the innovative response of peasants to be clearly consistent with a general theory of stratification and risk taking—a conclusion that cannot help but have serious implications for all attempts to motivate peasant sectors of developing economies. The book is useful, not only for its careful description and documentation, but for its analysis and conclusions.

Howard A. Osborn

Foundations of an Agricultural Policy in Paraguay

By Adlai F. Arnold. Praeger Publishers, 111 Fourth Ave., New York 10003. 312 pages. 1971. $17.50.

Inherent in the comprehensive analysis of a problem—in this case the problem of how to promote agricultural development—is the risk of recognizing the complexity of the problem and doing nothing. While this is not the approach to agricultural development that Arnold recommends, it characterizes past policies in Paraguay, at least in terms of policy output—the extent to which change has occurred.

Arnold suggests a pragmatic approach of first sorting out the question of the land tenure system and then hammering away at the agricultural infrastructure. He believes that the present land tenure system in Paraguay, whereby most farmers have only enough land for subsistence farming, is the principal roadblock to development. His approach makes sense in the context of Paraguayan agriculture, and it might, in fact, prove to be the best approach.

It is not the lack of an approach, however, that has stymied agricultural development in Paraguay. The problem of development has been analyzed, the potential of the land and of the human resources has been measured, plans have been made and approaches suggested. But apparently effective demand for change has not been forthcoming because, if it exists, it is not manifest in a force that is politically powerful enough to prevail. Arnold points out, and perhaps unwittingly focuses on the sine qua non, that "until the persons most affected (the small farmers themselves) become a stronger political influence in the country, the situation is likely to continue as it has for several centuries."

Bruce L. Greenshields

Banking in Frontier Iowa, 1836-1865

By Erling A. Erickson. Iowa State University Press, Ames 50010. 183 pages. 1971. $7.50.

The "Black Hawk Purchase" was a strip of land, west of the Mississippi River, which, after a bloody contest, was ceded by the Indians to the Federal Government in 1832. It was first attached to the Michigan Territory, then to the Wisconsin Territory when Michigan became a State. It became the Iowa Territory in 1838.

In 1833, the Black Hawk Purchase was opened for settlement. The author describes the movement of population into the area, the measures adopted by settlers to protect their claims to land on which they settled before the land had been surveyed and offered for sale, and measures of preserving order and punishing crime before civil government was established. He reviews the motley assortment of coins and paper money in circulation at the time and the problems they created for the settlers.

The first Iowa bank was chartered in 1837—the Miners' Bank of Dubuque. It had a checkered career and was investigated several times. Its charter was repealed in 1845.

Population expanded rapidly in (and beyond) the Black Hawk Purchase, and in 1842 the Sauk and Fox tribes ceded the remainder of their lands west of the Mississippi River to the Federal Government. Soon came efforts to secure statehood. One of the knottiest problems was to write an acceptable constitutional provision on banking. The author describes the alignment of forces and the political maneuvers that led to a constitutional prohibition of banks of issue when Iowa became a State in 1846.

As a result, Iowa continued to be a dumping ground for the notes of banks in other States; and local counties, cities, towns, and even business concerns issued scrip, warrants, and notes that circulated as money. Also, deposit banking, and the use of checks and time certificates, developed to provide services that banks of issue were forbidden to provide. The manner in which these developments occurred, and the chaotic conditions that often resulted, are interestingly described.

The author goes on to point out that, despite monetary difficulties, Iowa developed rapidly in the decade following its admission to the Union. Its economy became increasingly market oriented as the railroads spread westward and as the use of farm machinery and equipment increased. These changes made ever more necessary a monetary and banking system that would facilitate interregional exchanges of goods and funds. It was not until 1857, however, that

the constitutional prohibition against banks of issue was removed.

In 1858, legislative provision was made for the chartering of banks under a "free bank" law and for establishment of a State bank. For various reasons no bank ever was chartered under the free bank law, but the State Bank of Iowa, with eight initial branches, was established in 1858, and seven more branches were formed later. This bank also had a short career. In 1865, when the Federal Government taxed State bank notes out of existence, all but one of the branches became national banks.

Within the limits of its resources, the State Bank of Iowa apparently provided a sound currency and a credit service that met the short-term credit needs of business concerns. However, it never succeeded in driving out of circulation the notes issued by banks in other States, and it provided little, if any, of the longer term credit needed by farmers and others. Those needs, according to the author, were increasingly served by private banks of deposit which, by 1861, numbered 73 and operated in 43 Iowa communities.

Frontier economic and monetary conditions have been described in other books, and the Iowa experience was not unique. The book has special interest for persons like the reviewer, whose grandparents settled in Iowa in the 1850's. The facts in the book appear to have been carefully researched, and scalograms have been used to identify the pro- and anti-bank groups. One of the stronger features of the book is its analyses of the political influences that focused on the banking issue in Iowa.

Fred L. Garlock

Professional Forestry in the United States

By Henry Clepper. The Johns Hopkins Press, Baltimore 21218. 337 pages. 1971. $10.

The influence of a strong professional outlook on the development of national programs and policies is well illustrated in this volume on forestry. Although forest economics is recognized by both economists and foresters, there is no reference to it in the index.

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