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TABLE 7.—Method of sales of orange juice ranked by arithmetic mean and by geometric mean monthly sales

Arithmetic mean		Geometric mean	
Method of sale	Mean monthly sales	Method of sale	Mean monthly sales
	Gallons		Gallons
Dispenser 3	99.8	Dispenser 3	93.5
Dispenser 1	99.1	Dispenser 1	93.0
Jug 2	85.1	Dispenser 2	77.0
Dispenser 2	81.5	Jug 2	75.1
Jug 3	80.7	Jug 1	66.9
Jug 1	72.8	Jug 3	66.9

The mean sales for jug 2 did not differ significantly from any of the other means. But the exact student test for comparing the mean for dispensers with the mean of jug sales indicates in both cases that, on the average, dispensers

have a highly significant superiority over the jug method of sale. An approximate test suggested by the data indicate further that dispensers 1 and 3 are superior to dispenser 2. As might be suspected from the data, no test indicated definitely a superiority of dispenser 3 over dispenser 1.

Conclusion

It has been shown that two different sets of assumptions lead to approximately the same conclusions; the only valid measures of adequacy of the hypotheses were about the same for both sets. Many researchers suppose that some statistical test should exist to aid in the selection of one or the other set. But in both instances, the conclusions are derived from the assumptions, and they clearly cannot serve in addition as a basis for determining which set is the more acceptable.

Book Reviews

Land for Tomorrow. By L. DUDLEY STAMP. American Geographical Society, New York.

Indiana University Press, Bloomington, and 230 pages. 1951. \$4.00.

THIS IS ANOTHER BOOK about the world food problem (with a few comments on minerals and a plug for mapping present land-use) by a professor of geography at the London School of Economics. It is based on a series of lectures given by the author at Indiana University in 1950.

Progress toward the solution of this problem is such a stern and urgent challenge to Western Civilization that any book that may encourage people to study it is welcome. This one will be useful to those who have not yet studied the problem, provided they follow it up with specific discussions of the factors involved and of constructive suggestions about how to develop the potentialities of land and people.

Dr Stamp's intentions are obviously in the public interest as viewed by an English professor who has travelled widely (and well) and

who wants to be helpful. The book has many good paragraphs about ideas that need frequent restatement and repetition. Yet these are diluted with others that are too general or too platitudinous to be rewarding.

The point emphasized on the dust jacket is surprising, as its author suggests, ". . . that the most important undeveloped lands are not in the Tropics and uninhabited latitudes, as we might expect; the hope for land development lies in the middle latitudes, in the United States, the Soviet Union, Canada, Australia, and the Argentine . . ." Indeed surprising! Perhaps enough to make the book sell. Fortunately, however, this is not what the author says. He writes, ". . . that there are greater immediate prospects of increasing agriculture output in the middle latitudes than there is of securing immediate help in the world food

situation from much more difficult tropical lands." What a difference! With the word "immediate" added (and twice) the author's statement agrees with the view of every professional agriculturist of my acquaintance who has studied in both places.

We have two sorts of soil potentialities: (1) for increasing both yield and production efficiency on the soils now being farmed, and (2) for finding new acres of responsive soils, many of which may need careful management for efficient production. Obviously, the best *immediate* prospects are in areas of high present economic activity and well-developed education in technology.

But the long-time view, perhaps in 25 years, perhaps in 100 years or longer, is a different matter. The author emphasizes in a quotation from J. D. Black that by and large each country shall need to work out the problem for itself. About Point Four in this connection, the author suggests by delicate inference that it is—well, he is very cautious, perhaps "overoptimistic" is the strongest word he would permit in a summary. I should not want to imply that I knew exactly what President Truman had in mind when he gave his famous Point Four message, but it seems fair to suppose that he was taking a long view, and of people as well as of land, and that no matter how long it took, now was none too early to start.

The author does not give a definite summary of his own ideas of potentialities in the Tropics. He rightly emphasizes that techniques cannot be transferred directly from temperate regions to the Tropics. This is probably the most important contribution of the book. Probably every leading professional agriculturist would agree, if we leave out the techniques for basic research, *which can be transferred*. Yet, it is vital not to leave them out, but rather to concentrate on this level of science where direct transfers can be made.

Dr. Stamp gives many examples of difficulties, including, of course, the failure of the British Groundnut Scheme in East Africa. He has much less to say on the constructive side. Curiously, he has not a word about the excellent work of the British agriculturists in the Sudan, nothing about the highly successful Gezira Scheme, and he just mentions the great agri-

cultural research program in the Belgian Congo. A few hopeful possibilities are suggested, but he finds it easier to "explain" the failures.

At least to this reviewer, his picture of the Tropics is weak and unbalanced. Certainly it will take imagination and hard work to bring forth the agricultural plenty in the Tropics from soils so unlike those of the middle latitudes. But it wasn't easy years ago to develop the central part of North America with the tools then available.

Nevertheless, Dr. Stamp's emphasis on the difficulties of technical assistance to undeveloped countries may be all to the good. The American people especially need to realize how hard it is to do a successful job and that essentially every American technician who has a better than even chance for success will be one taken from a piece of important work in our own country.

A book on this subject needs figures, and accurate ones are as hard to come by as the author suggests. The errors in the available figures are compounded by two difficulties: (1) Failure to appreciate the enormous differences in both present and potential response to management among contrasting kinds of soil and (2) a failure to distinguish between "soil," primarily a concept of natural science, and "land," primarily a concept in social science. Throughout, Dr. Stamp uses the word "land" for both "soil" and "land," so that his meaning is often obscure. Thus, some of his conclusions from the comparisons of yields per acre or acres per person are not valid because of great contrasts in soil, in the economic characteristics of land, or in both. Nor do summaries "average out" on a country basis.

He compares, for example, the "average farm" of the United States with that of England and Wales. He says, "I am well aware of the artificial character of an 'average' farm." But obviously he isn't; because he draws such conclusions as the one that the British farm is larger and better stocked than the American. A part of the soils in the United States are comparable to those in Britain, but certainly not the soils in the South, the Great Plains, or the far West.

More curious is his use of "efficiency" in

country comparisons of agriculture. "In a world short of food," he writes, "it is surely clear that what matters is the actual amount of food produced, so, making some allowance for quality, the higher the output per unit area, the greater the efficiency of the farmer." By this calculation, "efficiency" is relatively low in the United States, again as an average. Yet later, he points out that something must be wrong with that approach and suggests that the amount of labor used is not immaterial. He says with ". . . the concept of efficiency as measured in terms of output per man-hour, then clearly every extension of mechanization is likely to lead to increased efficiency." With this concept, he still finds parts of Canada and of the United States ahead of Britain. But he balances this by the "damage done to the soil since the sods were first turned by the pioneers"—damage to show up later in production figures, one assumes. With so much juggling of figures, it is strange how he avoided the concept of output per manday-acre, or of input-output ratios, considering all production factors. Yet despite these curious calculations, he comes out for the family farm in temperate regions.

Dr. Stamp gives strong emphasis to the desirability of freer trade among countries, especially through the "iron curtain" and the "dollar curtain." Many will agree and hope that he gathers converts, but he has no suggestions for bringing it about.

The book contains one specific suggestion which we can only hope will not be taken seriously. This is a scheme for a world land-use survey. Although he suggests in passing that basic facts are needed, such as soil surveys and the like, he urges this proposal of classifying and mapping present land use. The results of such a survey, *following* a good soil survey, or concurrently with it, have some use. They permit comparisons between present use and potential use that highlight the critical areas needing attention in agricultural research and

service programs.

Yet by itself, a survey of present land use is of little value. The land-use pattern is the combined results of many factors—soil, ownership, and other institutional characteristics of land, location, both local and general economic conditions, skills of land occupiers, and so on. Because an area is or is not used for sugarcane tells us very little about its potentialities and management requirements. Even in many local communities, for institutional reasons, we may find excellent farms, poor farms, and wild land on different areas of the same kind of soil having identical basic potentialities. In fact, maps of present land use as the primary basis for agricultural planning have probably led to more mistakes than otherwise.

As the author explains, land use has been mapped in Britain. In relation to cost and the time of both paid and voluntary personal services, its values to *agriculture* is highly questionable, except as an interesting sort of "Domesday-Book" record that permits comparisons between present land use and potentialities where basic surveys have been made.

Basic surveys that can give us a clear concept of potentialities are needed. In agriculture, this gets back mainly to climate and soil, including slope, stoniness, texture, chemical composition, and all the many other soil characteristics that determine how an area responds to management. Badly as staff and funds are needed for these basic surveys essential to developing efficient sustained systems of farming in both presently used and unused areas, it would be a great pity indeed if they were used instead for any general program of land-use mapping.

Dr. Stamp avoids strong statement. Greatly to his credit, he does not try to scare his readers. He quotes from some who do, especially on the matter of soil erosion. Although a bit lacking in any sense of urgency, the writing is simple and easy to read.

Charles E. Kellogg

HERE IS A WEALTH of material on the development of the law concerning farm tenancy and cropping contracts in the Southeast. The region delineated for study is composed of 11 States: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. In his preface the author states that an "analysis of the statutes and appellate court decisions has been attempted with a view to obtaining a treatise which would be useful to lawyers, sociologists, *agrarian economists* [italics ours], and agriculturalists alike." He adds the hope "that the suggestions made with respect to changes in the statutes will be considered by state legislators with a view to the clarification and modernization of the law. . . ."

As a general rule, the author takes up one subject at a time, traces its historical development, and describes the current status of the law, including its variations throughout the region. He usually comes to some conclusion regarding the adequacy of the law, primarily from the standpoint of the farm tenant or cropper, and often makes suggestions for alleviating its inadequacies. Subjects covered include, among others, the distinction between tenancies and cropping contracts, the different types of tenancies, rights in crops, priority of liens, improvements and repairs, option contracts, and cropper's rights. He becomes convinced that certain statutes and court decisions are unsuitable to agricultural communities and that farm tenancy law has long favored the landowner at the expense of the tenant. His concluding chapter discusses "suggested reforms to alleviate [the] plight of farm tenants and to modernize laws pertaining to the landlord-tenant relationship." An index aids in finding references to the law in the respective States.

This book supplies an interesting and informative source of knowledge for law professors, practicing lawyers, and perhaps other legally trained persons. The author is a lawyer and speaks the lawyer's language. But just where its usefulness lies for agricultural researchers, instructors, and extension workers is not so clear. In the first place, many undefined legal

terms and otherwise difficult passages have been employed.

A wholly adequate presentation of the farm tenancy law of 11 States is at best a tremendous task. The author covers some subjects on a State-by-State basis, but he does not cover every State on every subject. While there is no settled law on certain subjects in some States, the author does not always make it clear that this is the case when one or more States are omitted from the discussion. This would create difficulties for a reader who is interested in the law of a particular State.

The type of study upon which the book is based also tends to limit its usefulness. It is largely a discussion of statutes and reported appellate court decisions, that is, the law in the books. Relatively few controversies are brought into court, and even fewer reach the appellate courts. Many readers would like to know how things are commonly settled out on the farm, in law offices, and in the lower courts. To what extent and in what manner are tenancy laws, as formulated in the statutes and reported court decisions, actually applied? This question is left unanswered.

Farm tenancy is a good example of the interrelationships that often exist between law, economics, and rural sociology. It is sometimes difficult to say just which phase of the subject should be considered primarily economic and social, with legal implications, or primarily legal, with economic and social implications. In this area no one field of inquiry can progress satisfactorily without the others. The author has made a commendable attempt to interrelate these fields, but this cannot be done effectively without a closer look at what lies beyond the law books. For this and other reasons his attempted integration is only partially successful.

This book fills only a segment—but an important segment—of the research that is needed. The agricultural economy of the Southeast is undergoing significant developments that call for a continuing inquiry into the effect or lack of effect of farm tenancy laws upon agricultural production and conditions, and what new adjustments should be sought through educa-

tion or legislation. Many of the author's conclusions in this regard are no more than partially proven, though several would definitely be useful in formulating hypotheses to be tested in further research. Such research would call

for the combined talents of both legalists and agriculturists — legalists who see the agricultural setting and agriculturists who see the legal setting.

Harold H. Ellis

What Happens During Business Cycles. WESLEY C. MITCHELL. National Bureau of Economic Research. 386 pages. 1951. \$5.00.

Conference on Business Cycles. National Bureau of Economic Research. 427 pages. 1951. \$6.00.

FOR FORTY YEARS Wesley C. Mitchell was a pathfinder in business-cycle research. His last volume does not differ in form from his previous work in the National Bureau of Economic Research, which involved massive compilation of data, the development of statistical techniques to measure business cycles, and the behavior of the several sectors of the economy during those cycles. In this respect, there has been substantial progress. Mitchell's series now number 800. These have been compared with reference cycles, a means of averaging business cycles; the series conformity to business cycles and the amplitudes of their rise and fall have been measured individually; and finally, attention has been given to their cycle-by-cycle variability. Mitchell's death interrupted the logical conclusion of this study—the analysis of the processes of expansion, recession, contraction and revival, out of which Mitchell hoped to find the answer to “how an economic system of interrelated parts develops internal stresses during expansions, stresses that bring on recessions, and how the uneven contractions of its varied parts pave the way for revivals.”

While the most rewarding part of the study is yet to come from Mitchell's colleagues at the National Bureau, Mitchell's book is rewarding, particularly to the technicians who are working on business-cycle analysis. Even for those with only a general interest in the subject, examination of the tables and charts will provide stimulating exercise in rationalizing why some series behave as they do. It should be noted that Mitchell does not claim anything significantly new—and in fact his report leans toward under-

statement. He writes that in large part his summary of what happens during a typical business cycle “repeats what has been known to careful observers, merely putting familiar impressions into definite form.” It should be noted also that in the search for regularity in behavior “. . . what we have learned concerning the behavior of time series by analyzing hundreds of them . . . leaves us with a healthy respect for the potency of irregular movements.”

The second book, which contains the proceedings of the Conference on Business Cycles held in November 1949 under the auspices of universities and the National Bureau, is an important contribution to business-cycle research. All viewpoints of thought in this field are ably represented and spiritedly contested. This collection of papers and comments on papers given at the Conference yields the impression that a transition phase is at hand in business-cycle research. It is significant that the leaders of the two dominant schools of thought in this field in the past have been lost in recent years—Joseph A. Schumpeter, the exponent of the historical approach to the analysis of business cycles, as well as Mitchell. Schumpeter makes a cogent appeal for his approach in this volume.

The introduction to Mitchell's book, written by Arthur F. Burns, serves also as the principal contribution concerning Mitchell's work in this volume. But it is abundantly clear that there is considerable dissatisfaction on the part of some with the progress in Mitchell's approach of painstaking examination series by series, as well as the inadequacies of the historical approach toward the development of the compre-

hensive theory of business cycles. The viewpoint of the econometricians that a system of structural equations can be developed which will describe the operations of the economy and the theory of business fluctuations is ably presented by Jacob Marschak, Carl Christ, Jan Tinbergen, and Lawrence Klein. Christ's paper has special importance in that he tested the pre-

dictive ability of an econometric model prepared by Klein with some modifications by Christ and found that the model fared no better than a "naive" model which simply extrapolated the value of each variable from the preceding year or the trend between the two preceding years.

Nathan M. Koffsky

Selected Recent Research Publications in Agricultural Economics Issued by the Bureau of Agricultural Economics and Cooperatively by the State Colleges¹

ANDERSON, ROICE H. TRENDS IN CHICKEN SLAUGHTER AND PRICES IN THE WESTERN STATES. Utah Agr. Expt. Sta. Special Rept. 5, 15 pp., illus. May 1952. (RMA; Agr. Expt. Stas. of Calif., Ore., and Wash.; BAE; and PMA cooperating.)

Chicken slaughter in both the United States as a whole and the Western region increased strikingly during the 1940's. Chicken slaughter per capita in the Western States in recent years has been less than 60 percent of the United States average. Price differences between classes of chickens at major United States markets, particularly between light and heavy hens, have been greater since World War II than during the war. Price differences between light and heavy hens were greater at San Francisco and Los Angeles than at Midwestern and eastern markets.

BADGER, HENRY T. MARKETING CHARGES FOR HEAD LETTUCE SOLD IN CLEVELAND, OHIO, FEBRUARY-JUNE 1950. U. S. Dept. Agr. Marketing Research Rept. 6, 24 pp. June 1952. (RMA)

From February through June 1950 for size-48 head lettuce from California and Arizona, marketing margins from f.o.b. shipping point through each step in the marketing process to consumers in Cleveland averaged \$4.85 a crate, or 61 percent of the consumer's dollar.

BADGER, HENRY T. MARKETING CHARGES FOR HEAD LETTUCE SOLD IN PITTSBURGH, PA., DECEMBER 1949-JUNE 1950. U. S. Dept. Agr. Marketing Research Rept. 4, 26 pp., illus. April 1952. (RMA)

Provides specific information on marketing margins for lettuce according to size of head and producing areas. Pricing policies and margins are shown for retail stores according to their methods of buying produce.

¹ Processed reports are indicated as such. All others are printed. State publications may be obtained from the issuing agencies of the respective States.

BANNA, ANTOINE, ARMORE, SIDNEY J., and FOOTE, RICHARD J. PEANUTS AND THEIR USES FOR FOOD. U. S. Dept. Agr. Marketing Research Rept. 16, 99 pp. 1952. (RMA)

Brings together the statistical and economic information that is available concerning the food uses of peanuts, other than crushing for oil. Discusses the major factors that affect consumption in the several alternative outlets and includes background material on trends in production, foreign trade, and domestic crushing.

BARLOWE, RALEIGH, and HARTMANS, ERMOND H. SOME ASPECTS OF FARM HOUSING AND SERVICE BUILDINGS IN MICHIGAN. Mich. Agr. Expt. Sta. Tech. Bul. 232, 31 pp., illus. June 1952. (BAE cooperating)

Most all of the 216 farmhouses studied were single-family, detached dwellings. Approximately nine-tenths of them were frame with solid masonry continuous-type foundations. Rated according to structural level and conditions, 56 percent were found to have no deficiencies requiring early repair, 32 percent needed moderate repair, and 12 percent needed extensive repairs or complete replacement.

BUTLER, CHARLES P., and STREETMAN, HAROLD L. ECONOMICS OF MECHANICAL COTTON PICKING IN SOUTH CAROLINA. S. C. Agr. Expt. Sta. Bul. 399, 35 pp., illus. January 1952.

Based on 1950 results, total picker costs averaged \$35 an acre for harvesting only 25 acres but dropped to \$12 an acre when 100 acres were harvested. Hand-picked cotton was valued at 2.68 cents more per pound of lint than machine-picked cotton.

FELLOWS, I. F., FRICK, G. E., and WEEKS, S. B. PRODUCTION EFFICIENCY ON NEW ENGLAND DAIRY FARMS. 2. ECONOMIES OF SCALE IN DAIRYING—AN EXPLORATION IN FARM MANAGEMENT RESEARCH METHODOLOGY. Conn. (Storrs) Agr. Expt. Sta. Bul. 285, 47 pp., illus. February 1952. (RMA; BAE and N. H. Agr. Expt. Sta. cooperating)