Labor Productivity Functions in Meat Packing. By WILLIAM H. NICHOLLS. The University of Chicago Press, Chicago. 1948. 256 pages.

ALTHOUGH this book is not likely to be widely read, there are several reasons why it is worth attention from researchers working in the agricultural marketing field, whether their interest may be chiefly theoretical, statistical, or some combination thereof.

On the surface this is simply a study of the cost of labor-productivity functions involved in the fresh-pork operations of a Mid-western meat-packing plant in the now distant years 1938–40. The author's objectives are modest. Admittedly, the scope of the book is limited for it deals only with the statistical relationships between labor input and the physical volume of output as demonstrated by one meat-packing plant through two seasons of operations. Furthermore, the author admits that his own "veneer of . . . sophistication" in the use of statistical techniques is not yet thick enough to suggest that any substantial contribution to statistical methodology is made, although he does use as advanced statistical methods as the data themselves will support.

The analysis does attempt to make a limited but significant contribution to the economic theory of the firm. Attention is called to the fact that analytical studies in this field have traditionally measured labor in terms of manhours, whereas actually two dimensions are involved—the number of workers and the average hours per worker. Each of these dimensions is presumably subject to the law of diminishing physical productivity and each can, within limits, be substituted for the other.

The author doubts whether the particular results of the study are appropriate for direct application to problems of either private or public policy. But he does raise some questions with respect to public labor policy, which need to be further considered, especially the question as to whether the shortening of the average work week—or the substitution of men for average hours per worker—may not have proceeded in some instances to the point where economic efficiency is affected.

This might be considered a *practical* study, despite the very modest claims the author advances and the age of the data themselves. However, Dr. Nicholls' approach to the problem is essentially theoretical and he has endeavored to check his theoretical reasoning by the application of modern statistical techniques. As a result, agricultural researchers will find the chapter on Critique of Statistical Methodology as interesting as the opening chapter in which the summary and conclusions of the study are outlined.

The author undertook to check his theoretical analysis by the application of two statistical formulae, one in arithmetic terms with relationships stated as second-degree curves and the other in logarithmic form. His conclusion here is simple and honest indeed, the two approaches for the most part did not yield consistent results. As a matter of actual fact, there was a question as to whether simple straight-line relations would not equally well have described the relationships existing within the ranges covered by the available data. That is, the operations of the particular plant seem to be centered around a relatively efficient norm, so that the laws of diminishing returns of productivity came into play to only a very small extent, if at all. Because of this inconsistency the author concludes that even more advanced statistical techniques, such as simultaneous functional equations, would not be likely to yield production functions much different from those already determined.

The use and discussion of standard tests of significance is also of considerable interest. Statistical tests for significance are applied to all of the many relationships and correlations worked out for each of the several subgroups into which the data were divided, even though there was evidence of considerable non-randomness and even though the author came to the conclusion that important differences in the distribution of men and hours between the two seasons supported the view that the universe had actually changed from 1938–39 into 1939–40. Such a conclusion may seem innocent enough. However, it surely underlines the difficulty of applying statistical techniques in some practical fields since it is likely that few economists would ordinarily assume significant changes in the underlying forces influencing the economy between 1938–39 and 1939–40.

Altogether, the author is exceptionally honest. He gives his reasoning, he describes his data, he checks his answers statistically, and he sets down what he found. There are times when we could wish other researchers might do as much.

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