# PROCEEDINGS OF THE THIRTEENTH INTERNATIONAL CONFERENCE OF AGRICULTURAL ECONOMISTS

*held at the University of Sydney*
*Sydney, New South Wales, Australia*

21–30 AUGUST 1967

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## The Economist and Farm People in a Rapidly Changing World

LONDON
OXFORD UNIVERSITY PRESS
NEW YORK TORONTO
1969

# QUARTER CONFERENCE 2

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## OPENING STATEMENT

## *The approaches and findings of economists*

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THIS paper will be devoted entirely to comments on the bold and seminal document which Kristensen has presented. The author will probably agree that his methods of analysis and tentative conclusions are still open to debate. But he has already performed an extremely valuable service in focussing discussion. I think that all will agree that it is important that as much effort as possible should be devoted without delay to the estimation of the probable long-run supply of, and demand for, food in the different sections of the world economy.

The background against which we are working is one of rising world population. Whatever we may think about it, this at any rate makes the problem more intellectually stimulating, as well as more urgent. We shall have a substantial rise in world population—barring grave wars or epidemics—for more than a generation into the future, however zealously family limitation is practised, or into whatever countries it may be introduced where it does not now prevail. The growth of world population is entirely the consequence of medical discoveries, made in the developed countries, diffused with ever-increasing rapidity among the less-developed countries. The children already born, growing up to maturity and becoming parents, will suffice by themselves to provide for a further large increase in world population, even if they only bring up small families. Population mathematics and historical experience alike tell us that a demographic cycle takes nearly a century to work itself out, and the cycle through which we are now passing, the immense consequence of the spread of medical knowledge to the poorer countries, did not really begin until the 1930s.

I am glad to see the frank admission that previous estimates of income elasticity of demand for food throughout the world have been too high, and that world consumption of food is advancing much more slowly (regrettably for us who represent the interests of farmers!) than it would

have done if the F.A.O. estimates of income elasticity had been correct. Many studies of income elasticity of demand for food in low-income countries have suffered from a simple and disastrous statistical bias in that food consumption as a function of income, is measured *per family* and not *per person*. Those who do so forget that in Asia or Africa anyone who earns a higher income is liable to find a substantially increased number of relatives coming to live with him in consequence (I am told that this happens to film stars, too). But apart from this, all the misinformation which F.A.O. have disseminated about half the world being mal-nourished serves to create the impression of people desperate for more food, who will therefore spend on food most of any additional income which they may receive. The truth is far otherwise. Certainly most of the world's inhabitants would like to eat more and better food. But they have a great many other urgent needs too, as we see from all available consumption studies, for building material to construct better houses, for clothing, for medicine, for school books for their children. Income elasticity of demand for food in low-income countries is not kept at a maximum by urgent physiological necessity, as many have hitherto supposed. It is in fact very variable, and much influenced by the 'demonstration effects' of what other people eat, being higher in urban than in rural communities.

The suggestion that the old high F.A.O. estimates were correct, but have been temporarily distorted by a change in income distribution, and an increasing proportion of children in the population, are unconvincing. Income distribution does not seem to have changed very much, and the effects of improved survival rates, after a short time, are to *decrease* the proportion of children in the population.

It is much harder to reach any conclusions about the price elasticity of demand for food in low-income countries. One thing which does seem clear is that we are dealing with a highly-curved relationship, and that in times of real scarcity price elasticity of demand for food can be high. We could probably apply to the low-income countries now the estimates which Gregory King made for a rather hungry seventeenth-century England, namely 'That a Defect in the Harvest may raise the Price of Corn in the following proportions: a Defect of one-tenth raises the price three-tenths above the Common Rate . . . five-tenths raises the price forty-five tenths', indicating a price elasticity of demand of about 0·35 in normal times, rising to 0·7 in times of great scarcity.

This leads us on to the important question of whether subsistence farmers have backward-sloping supply functions. Will a rise in price reduce the quantity of agricultural products which they offer for sale? Backward-sloping supply functions undoubtedly do exist (one of the most interesting being shown by Chayanov's figures for pre-revolutionary Russia); but they are rare. They are likely to be found only in very isolated, conservative communities, and where the industrial products on which the farmer could spend additional income, if he earned it, are scarce and expensive. This is not true of most of the world now.

It is difficult to understand the factor of one-quarter for expressing grassland in terms of arable land, unless it refers to cold or semi-arid land, in which case perhaps the coefficient should be lower. In areas of good rainfall and low agricultural population density, much land which would be capable of good arable cropping is used for grazing. With improved methods of pasture management, such as strip grazing, meat yields have been rising. Davies takes as his objective live-weight gain of 1·1 tons/hectare/year (1,000 lb/acre/year). Converting to dead weight, and on present average world relative prices, this is nearly equivalent in value to the highest arable yields. Davies's objective, however, refers only to temperate grass lands. Heavily fertilized tropical grass lands give much greater yields. One experiment with Napier grass in Porto Rico reached the incredible yield of 75 tons/hectare/year dry weight of grass. This should yield over 10 tons live weight of good beef. The Law of Comparative Advantage, which has not been repealed, however disrespectfully some of us treat it, may in the long run lead the world's livestock production towards the tropics, and arable production towards the colder countries (the tropics should also show in the future a relatively greater attraction for forest production).

It is true that the improvement of agricultural production in the less-developed countries will require capital. But the order of magnitude of these requirements is less than is often supposed. Indian agriculture requires capital (including land improvements, but excluding the price of the land itself) equivalent to about one year's output—this ratio could be reduced a little if we excluded the uneconomic livestock. Modern agriculture and grazing in Australia show a capital requirement of less than two years' output; slightly over two years' in United States and Western Europe. Many modern developments in agriculture are capital-saving, particularly the displacement of draft animals, and lesser requirements of buildings per unit of product with larger farm units. So cumulated net savings totalling less than one year's product—admittedly spread over a long period—should suffice to provide the capital necessary for the transformation of agriculture.

The effects of education in bringing about economic progress, so difficult to analyse quantitatively, though none the less indeed perhaps for that reason, now attracting so much attention, nevertheless undoubtedly require our consideration. I agree with Kristensen's suggestion that money spent on widely diffused general education may be as fruitful, or even more so, than the same amount of money spent on direct technical instruction. The educated man has the more flexible mind and the greater willingness to innovate. Surely this is one of the principal lessons we can learn from the experience of Japan, whose introduction of universal primary schooling as early as 1890 was a heroic decision for a country at that time so poor.

If we make a statistical aggregate of all the developed countries, it is true that average crop yields per unit of land are not much higher than in the less-developed countries. But here surely we should distinguish between U.S.A., Canada, Australia, and Soviet Russia, on the one hand,

where land is cheap, and yields are low, as against the high yields obtained in Japan and Western Europe.

Kristensen assumes that no substantial increase in the area of arable land can take place in the less-developed countries. But there is a great deal of potentially good arable land still unused, not only in Africa and Latin America, but also in Asia. India and Pakistan, it is true, have little if any more land which could be brought into cultivation. But there are great areas of good land lying vacant in Indonesia, Malaya, Burma, Ceylon, and Vietnam—as American and Australian soldiers know to their cost; their campaigning would be much easier if there were not so much jungle. Nevertheless, Indonesian experience showed us that efforts, however strenuous, to re-settle Javanese population on the outer islands could only move a very small proportion of such a large population. The situation is different in Africa and Latin America where, paradoxically, a sparse population who do not need additional land very urgently, nevertheless find it quite easy to occupy it.

I fully agree with Kristensen in estimating future agricultural labour force as a residual arising from the differences between the rate of growth of total population and rate of growth of the non-agricultural labour force. He estimates that the latter will grow, in the less-developed countries, at the rate of 3·9 per cent per year. I would regard this as the upper limit of the rate at which the non-agricultural sector could absorb labour, even if food supplies were abundant. In fact, I think that the rate of growth of the non-agricultural sector of the labour force in many of the less-developed countries, particularly the poorest, will be lower than this. The reason for this is to be found in what some have called 'the neo-Ricardian principle', which Haswell and I have developed in *The Economics of Subsistence Agriculture*. The proportion of the labour force which can be occupied in non-agricultural activities is itself found to be controlled by the productivity of the agricultural sector (subject only to the qualification that oil or other minerals, forest products, or manufactured products which can be exported, are available to some countries as 'agriculture-substitutes', enabling them to buy food abroad). I think that it would be safer to make the general estimate of the rate of growth of non-agricultural labour force of the less-developed countries only 3 per cent per year. If agricultural productivity per man remaining in agriculture increases at the rate of $1\frac{1}{2}$ per cent per year, and the income elasticity of demand for food is only 0·3, this will lead to a rapid increase, at the rate of over 5 per cent per year, in the volume of agricultural exports which the less-developed countries will be trying to sell, far from their transformation to becoming net importers in the aggregate, as Kristensen expected. For them to become net importers of agricultural products, they would have to produce large quantities of manufactures, at a cost which enabled them to sell them on the world market (it is no use assuming that they are going to make further very large discoveries of minerals, or that they would be able to go on selling them at present prices even if they did). The only less-developed countries which have hitherto broken through the barriers

which make the export of manufactures to the world market so difficult have been Japan and Formosa. India's experience in attempting to export manufactures has been extremely discouraging. It is true, as Kristensen says, that the most advanced Western industrial technology can be introduced into Asian countries. But this has applied so far only to a very limited number of plants, which probably make an inordinate drain on the receiving countries' scarce supplies of skilled labour. Raising the productivity of the whole of their industrial labour force to Western levels is quite a different matter.

Algae, which receive a passing mention, have in fact a very poor case as proposed substitutes for food—quite apart from the fact that nobody wants to eat them. Their maximum rate of photosynthesis, under the best laboratory conditions, has been found to be much less than that of our regular farm and garden plants.

It is quite true that there are many people in the world who are absolutely short of protein, and others who are taking their protein in the form of maize and other foods, which are biochemically questionable. But increasing livestock production is not the best way to put this right, at any rate for the next twenty or thirty years. Until the world becomes much richer, the obvious first move is to increase the output of high-protein crops, ground-nuts in particular.

Kristensen emphasizes the very important point that farm machinery may be demanded by some agricultural communities who are very poor, but who are subject to the constraint of having to get cultivation and planting performed at maximum speed in the short monsoon season. On the other hand, we may take the example of Clayton's careful programmes prepared for farms in East Africa, much wealthier than Indian, where the employment of mechanical cultivation was found to be definitely not worth while under present circumstances.

If an increase in non-agricultural labour force at the rate of as much as 3 per cent per annum is to be obtained, there must be strong income differentials to attract men away from agriculture. Kristensen implies that these already prevail in all less-developed countries. This does not seem to be the case in India. If we include all land rents, average per head incomes in agriculture are about as high as in the non-agricultural sector. Here we see the working out of the 'neo-Ricardian principle' stated above that the rate at which non-agricultural employment can grow is controlled by agricultural productivity. Attempts to increase the non-agricultural labour force any faster (with the corollary of having also to produce the agricultural exports necessary to pay for their imports) leads, as in India, to food shortages, rising agricultural prices and rents, and an eventual reflow of labour back to agriculture.

Kristensen's estimate of 4·3 per cent per year as the rate at which gross agricultural product per man engaged will be able to rise in the developed countries might even be on the low side. But this, it must be remembered, is gross product per man. Net product per man, after debiting the cost of increasing inputs of equipment, fertilizers, etc., is rising much more slowly.

There has been a lot of mistaken thinking about supposed very low, or even zero marginal productivity of labour in densely populated agricultural countries, accompanied by proposals to transfer such surplus labour to industry, at no real cost to agriculture. It was straight intellectual error on this problem of agricultural economics which caused one of the world's major disasters, namely the 'Year of the Great Leap Forward' in China in 1958. Mao was convinced—he said so in his writings during the 1950s—that one-third of China's agricultural labour force was economically redundant. In spite of warnings, he tried at one blow to shift some hundred million of them to other employment. Had he consulted the available information, he could have known before he started that the Chinese agricultural labour force was in fact fully employed for nearly all the year, and that the removal of any substantial number of them must lead to acute labour shortage in the critical planting and harvesting periods and to a great reduction in food supply. In any area with a short monsoon season, e.g. northern India, although most of the labour may be idle for months on end, there would nevertheless be a disastrous labour shortage in the monsoon season if numbers were much reduced. In countries with better distributed rainfall, such as southern India and Japan, better possibilities of transferring surplus rural labour arise.

My reasons for thinking that world trade will not develop in the way that Kristensen predicts are the existence of two constraints. (*a*) I do not think that it is possible for the *absolute* (not relative) rate of growth of non-agricultural employment in any country to exceed 4 per cent per year; (*b*) the proportion of non-agricultural employment in the labour force is fairly strictly controlled by the level of productivity in agriculture (see diagram in last chapter of *The Economics of Subsistence Agriculture*, showing a semi-log relationship).

The latter proposition may be qualified, first, by the existence of minerals or other products, which can be exported as 'substitutes' for agricultural products and, second, in special cases such as the economic development of Japan. However, it applies all too clearly in the case of India. In 1940 I predicted that by the 1960s India would have a much larger proportion of her labour force in non-agricultural employment than in the 1930s, and would be a large exporter of industrial products. In fact the agricultural proportion in the Indian labour force has remained almost unchanged since 1880, and Indian industrial exports have grown with paralysing slowness. The industrialization of India has been hindered by the stagnation of Indian agricultural productivity.

My contributions so far to this discussion have been in the fields of demography and economics, but not science or politics. It is not that I do not know about them, I was trained as a scientist and have practised as a politician. I find demography and economics easier subjects.

It is necessary to apply economics to science itself, because it has scarce resources of equipment and still more of men. I must draw your attention to the writings of Bruce Williams, now Vice-Chancellor of Sydney University, and of Charles Carter, Vice-Chancellor of Lancaster University, who

have pointed out that expenditure on pure scientific research can be economically excessive, if it lends to a shortage of scientists for teaching and industrial duties. Expenditure on pure research, which benefits the whole world, can be undertaken only by large and wealthy countries. Small countries can and must receive the results (or buy parent rights) from large—though in the case of agricultural research much local adaptation is necessary.

Australia has concentrated too many scientists in the Government-sponsored research organization C.S.I.R.O. with the result that the universities have suffered, and probably industry too. Research duties should be handed back to the universities—the students will then be taught much better, and even the best scientist is kept more alert by having to answer more difficult questions asked by intelligent undergraduates.

Older scientists may lose their inspiration for research while remaining good potential teachers—in C.S.I.R.O. such men become 'passengers', and expensive passengers at that. The distinguished Australian scientist Bragg, who, in conjunction with his father, was awarded the Nobel Prize for pioneer work on X-ray diffraction in crystals expressed hostility to all research institutes. They reminded him, he said, of nothing so much as a bed of tulips in a park; everyone knew that they had been bred elsewhere and brought to the park to flower. Every research institute he knew had got off to a fine start with talent brought in from elsewhere—and within ten years or so had begun to ossify.

In conclusion, I do not see America, Australia, and Western Europe producing increasing food surpluses to sell to the less-developed countries, highly attractive though such an idea may be to our agricultural politicians. I am much more concerned about the opposite possibility, of the less-developed countries placing rapidly increasing quantities of agricultural products on the world market, and complaining bitterly, and indeed justifiably, when world terms of trade turn further against them. If anyone asks what the developed countries can do in face of this grave prospect, it may be replied that they might at least stop subsidizing the production of agricultural surpluses which themselves will help to congest the world market.

## OPENING STATEMENT

DON PAARLBERG

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IT is fair to say that virtually every subject bearing on the production and consumption of food can be fitted into the format outlined by the four excellent theme papers.

I shall attempt an integrating or synthesizing operation and to outline the over-all system within which these four disciplines, as they relate to food and people, are reconciled with one another.

One must be impressed by these papers, with the uncertainty of the

prospect for food and people. How many persons in the world by the year 2000? Professor Borrie quotes responsible estimates showing a range of 1·5 billion people, almost half as many as are now in existence. What of food production? Will we learn to produce food from petroleum, as Dr. Bawden suggests we might, or achieve some other breakthrough and greatly expand the world's food supply? Or will increases come slowly and painfully, as some of our experiences in the less-developed countries indicate they might? We cannot tell. Yet we know that the food supply and the population will be in general balance. They always have been. Save for some spoilage, most of what is produced gets used. And it is clear that the numbers of people cannot exceed the food needed for their sustenance. Let us see how Professor Kristensen's economics and Professor Bićanić's political science manage to equate Dr. Bawden's food production with Professor Borrie's people.

Food supply and population cannot diverge for any appreciable length of time. If food becomes critically short, famine will reduce the population until a new balance is struck. If food becomes very abundant, we concentrate it, refine it, upgrade it, and so reduce its volume that it fits into the relevant number of human stomachs. We deal here with a biological principle, known to any man who has fed livestock. If food and population are generally equated, it is proper to ask regarding the means by which they are brought into adjustment and the level at which they are made equal.

We have Dr. Bawden's statement that it is quite possible, from a technical standpoint, to double food production between now and the end of the century. So, over-all, food production is an adjuster, and a big one.

Another big adjuster is livestock production. Professor Kristensen tells us that it is possible to feed seven times as many people on crops consumed directly as it is on crops consumed by livestock and converted into meat, milk, and eggs. If the food supply is reduced we eat the livestock and then eat the crops the livestock otherwise would have eaten. The adjustment potential of this adjuster is enormous. Not all countries have this shock-absorber in their food supply. The United States has it. We have a large livestock population. If we were willing to accept a diet similar to that available to most people of the world, we could easily feed several times our present population on the same acreage and with the same techniques as are now in use. Some countries, as in the Middle East, have long been so near the margin of want that the livestock population is very small and there is little cushion to avert disaster.

We must remember that downward adjustments in the diet—indeed, any abrupt change—will be strongly resisted. Habit is strong and acquired tastes are powerful. Nature endowed the tongue with the function of tasting and conferred upon the digestive tract basic responsibility for nourishment. But the tongue, that notorious deceiver, was also given the gift of speech, while the digestive tract was left mute. So in most councils concerned with food, taste and habits are more strongly represented than is nutrition. How different our diets would be if taste were synonymous with nutrition, and if the tongue would correctly report both!

Intensification of cropping systems is a great adjuster of the food supply. In the United States potatoes, rice, and corn produce almost twice as much food per acre as wheat, whereas rye produces only half as much. Among the vegetables, carrots yield twice as much as wheat, while beets and celery yield about the same as wheat. Tomatoes, peas, lettuce, lima beans, and asparagus yield one-fifth to one-third as much as wheat. The nutritive qualities of these different foods vary, of course. Gradually, over time, a cropping system emerges that takes into account ecological conditions, agricultural resources, population density, food preferences, nutritive needs, and the state of technology. If food becomes more abundant, a country shifts away from the crops that produce large amounts of food; witness the reduction in the acreage of potatoes and corn in the United States. If the population presses heavily on the food supply, the cropping system is intensified; witness the high percentage of cropland in corn and potatoes in the Sierra region of Peru.

Stocks of food also are important adjusters, as has been said. They are useful in the short run but can have little significance with regard to the problem here under consideration—the relationship of food to people by the year 2000. Stocks are more of a shock-absorber than a long-run adjuster.

Trade, of course, is a very potent adjuster, both in the short run and in the long run. If one part of the world has comparative advantage in agriculture and some other in industrial production, trade can adjust the food supply to the population in both areas, to mutual advantage.

We have, then, these adjusters in the food supply: increased production, livestock feeding, intensification, stocks of food, and trade. How much flexibility do they provide? Enough so that during the recent disastrous crop year in India, widespread famine was averted. Enough so that Western Europe was able to avoid mass starvation during the Second World War, despite the fact that her food imports were largely cut off and that many of her farm people and much of her agricultural production goods were diverted to wartime purposes. There is enough flexibility in these adjusters for the United States to keep most of her farmland in production during the past quarter-century despite an agricultural revolution that has increased crop yields 30 per cent more rapidly than the population. There is enough flexibility in this system so that any projection of existing production patterns, existing diets, and existing rates of population growth with the inevitable prediction of food gap or food surplus, is bound to be wrong.

But if disaster strikes and the adjusters are taxed beyond their maximum flexibility, hunger and starvation result. The society makes as many adjustments as possible on the food side of the equation. But the equation must be balanced, and if it cannot be balanced from the food side, it is balanced from the people side.

It is tempting to set up these relationships in an econometric model, for it is indeed an integrated system. I think I know the factors and signs, but I do not know the coefficients, which vary enormously from crop to crop, from country to country, and with the passage of time. I find the narrative

language, with its sometimes useful ambiguities, more suited to this subject than the precise language of mathematics.

The system I have described is incomplete. There is an additional adjuster and I have hesitated to include it because I do not know on which side of the equation to put it. In their book *The Story of Man and His Food*, and in a deplorable effort at completeness, C. C. and S. M. Furnas discuss cannibalism in its relationship to the food supply. They report that cannibalism is an adjuster of the food supply to the population and the population to the food supply. It is the only adjuster that has this double distinction. Furthermore, they say, it upgrades the diet. Historically it cannot be overlooked, but currently it cannot be discussed in polite society. This is a case in which a social gain has been achieved at the expense of a nutritional loss.

I now ask the key question: What are the institutional arrangements—political and economic—within which the foregoing adjustments are made? Professor Bićanić has provided us with a convenient synoptic table. For convenience I lump together his 'marketing agriculture' and his 'entrepreneurial agriculture' so that I have three classes instead of four. My three, then, are: subsistence agriculture, marketing agriculture, and centrally planned agriculture. I propose to discuss briefly how the balance between food and people is struck and how the adjustments are made in each of these systems.

In subsistence agriculture the matter is relatively simple. The farmer knows the food needs of his family and he has a rather good knowledge of the potential output of the resources at his command, within the given level of technology. I agree with Professor T. W. Schultz that in traditional or subsistence agriculture the factors of production are likely to be used in a fashion that roughly equates their respective marginal productivities. No one need tell the farmer of south-east Asia that he gets more food if he consumes it directly than if he first feeds it to animals. If given the opportunity of choice, he will use his resources wisely with respect to the needs of his own family. That is, his use of them will generally be efficient in a micro-economic sense. To say this, of course, is not to deny that central direction could help achieve some great advance in technology or a division of the product which is more acceptable socially. The major difficulty with subsistence agriculture is not so much a failure to allocate known resources well as a generally low level of technology.

In marketing agriculture, resource allocation is accomplished through the price system. In times of shortage high prices divert grain out of storage and into use. High prices attract food from surplus to deficit areas. The human being outbids the livestock for the limited supply of cereal grain. In times of low prices all of this is reversed. Milk goes into the bottle, the churn, the cheese vat, or the suckling calf, depending on price. A young man who reaches working age in a rural area decides whether to farm or to take an off-farm job depending on relative returns. As viewed by most Western economists, marketing agriculture is the prototype of classical competitive enterprise. Given an individualistic value system, it approaches

closer than any other arrangement to optimum efficiency in resource allocation. Those who find fault with the system point to the fact that it results in returns that vary greatly from one person to another. It is everywhere modified by the processes of central direction so well described by Professor Bićanić. For many years harsh judgement has been pronounced on this system. But its achievements are noteworthy. Those countries whose farmers have the highest levels of living use this system. And increasingly the centrally directed economies are borrowing parts and pieces of it.

This takes us, finally, to the centrally directed economies. How is the balance between food and people achieved in such countries? Resource allocation is determined by the central planning body. The cropping system, livestock production, storage policy, the movement of trade and, to a large extent, the consumption pattern, result from the decisions of experts. How well do these experts perform? Sometimes very well. The centrally determined decision in the Soviet Union to mechanize and modernize its farms seems to have been a wise one. But considerable errors have been made. In the United States centrally determined policy has long sought to reduce livestock production, while the principles of food economics tell us that with abundant agricultural resources, livestock production should be increased. In the Soviet Union erroneous centrally determined decisions for a time emphasized meadows instead of tilled crops, thereby imposing considerable handicap on food production. There is this distinct difference between the market and central planning: in the market economy no one need understand the operation of the adjusters previously described. No one need comprehend this model. It is enough that each producer and each consumer know his own utility pattern. This information is transmitted back and forth through the market. Though the level of technology is usually much higher in marketing agriculture than in the subsistence economy, the two are similar in this respect: Producer and consumer are aware of one another's wants. In the subsistence economy producer and consumer are two different embodiments of the same person, and confer on each decision. In the market economy producer and consumer know one another's wants through the medium of price. Price is, of course, sometimes a faulty guide to wise production and consumption. But it is with the help of the pricing mechanism that market-oriented agriculture has achieved the rather efficient allocation of resources which generally characterizes it. In a centrally directed economy, on the other hand, the experts must know the principles involved in the adjustment process and must be in position to impose them on those who produce and those who consume. The experts do not have the price system to provide them with awareness of the utility patterns of those who produce and those who consume food. For a public official in a marketing agricultural economy to be ignorant of the system I have described is at worst a personal embarrassment; for a public official in a centrally planned agriculture to be ignorant of it is a national disaster.

The less-developed countries of the world are moving away from subsistence agriculture. They are hesitating between marketing agriculture

and central planning, a decision which holds great portent for the efficiency of the food system and for the fulfilment of individual goals. I commend the programme committee and Professor Bićanić for injecting this subject into the Conference. To talk of economic development without reference to it would be to abstract from reality.

## REPORT OF QUARTER CONFERENCE 2

PROFESSOR PAARLBERG developed a case to reconcile the needs of people with their intake of food and standards of livelihood. But he attracted criticism for too great a reliance on the self-correcting mechanisms of the market. Professor Paarlberg pointed out that in respect of international imbalances in particular, these days such forces are seldom allowed to work.

Mr. Colin Clark treated the Quarter Conference to a tripartite presentation; first, he invoked his contribution to the Plenary Session with reference to Professor Borrie's paper; second, he drew on his written contribution which concentrated on Dr. Kristensen's paper; thirdly, he delivered an oral critique of the agricultural research institute and displayed uneasiness with such bodies as C.S.I.R.O. Many of the discussions from the floor were centred on the problems associated with Dr. Kristensen's thesis that manufactured exports of goods will provide the L.D.C.s with the external earnings necessary to fill the food gap which he postulated for them. There was a good deal of debate on the necessity, wisdom, and appropriateness of such a development.

The mood of the meeting tended towards less optimism regarding a balance in population and indigenous food supplies in L.D.C.s than Dr. Kristensen had postulated. Inevitably, perhaps, the discussion moved into the area of food aid and its role; there seemed little argument, however, that for better or worse, food aid mobilized more resources towards the development of L.D.C.s than otherwise would have been available. But food aid with surplus stocks was seen as clearly different from food aid based on production stimulated for that purpose. In respect of future sources of protein to meet the reasonable nutritional needs of L.D.C.s, attention was drawn to non-conventional protein sources and the interest now being developed in them by science and commerce. Whether such new sources were in fact needed was a matter which was not self-evident to participants from some primary producing countries. Inevitably one returns to the problem of the sources of foreign exchange.

The self-interest of nations in their trading policies also emerged and was not effectively refuted although it was possible to detect some sympathy in the dilemma resulting from the surge in output following technological change. In fact, it is the impact of the latter which seemed to be the hope of the future. That is to say, more realistic policies in D.C.s which took account of the scientific advances in agriculture and the need, desire, and wish for introducing such advances in the L.D.C.s.

Perhaps one of the more optimistic features to emerge from the discussion was the recognition of the potential gain from the international confrontation on policy issues and the mutual education resulting from such steps. By and large, the standard of public debate on contemporary policy issues was deplorably low. Improved information could lead to valuable advance in public willingness to understand some of the reasons why it did not always follow that a bird in the hand was worth two in the bush. A particular case was the effect of birth control on population growth. It was suggested that although policies to encourage birth control would slow down the growth of G.N.P., improved income per head with a smaller population might still give a viable basis for the necessary investment to promote self-sustaining growth. Although complex as a concept, it was seen that the responsibilities for getting the message across to the public at large was a public responsibility and meant leadership, education, and effective communication between policy makers and the people. While on this topic it is perhaps appropriate to take account of the suggestions, not challenged, that we have reached the stage where communication of new discoveries in science is at least as important as pursuing further discoveries which, with the present apparatus, stood little chance of implementation. In other words, greater recognition was needed for extension and education compared with research *per se*.

There was some discussion of agriculture's contribution to the rest of the economy through the 'man drain'. Since the theme of our Conference concerns farm people it is not inappropriate that the debate considered the quality of life which might result from economic change. It was rightly pointed out that some of the disadvantages of urbanization and industrialization were perhaps no worse than some of the—admittedly—different disadvantages confronting rural people in remote areas.

Many of the issues debated seemed to reflect on the inevitable conflicts between technical possibilities and administrative feasibilities. While it is necessary and right that we should recognize scientific advance, to know when the supply curve has shifted to a new position and gain new insights into some of the complexities of consumer behaviour in changing times, it is equally important that political feasibility should also be appreciated. In making advances, it is important to remember that the 'best should not be the enemy of the good' otherwise progress will be impeded.

Contributors to the discussion in Quarter Session 2, in addition to the openers included: Derek Healey *Australia*, Thorkil Kristensen *O.E.C.D.*, E. S. Hoffman *Australia*, I. H. Ergas *F.A.O.*, J. P. Gwyn *Australia*, H. de Farcy *France*, U. Aziz *Malaysia*, C. E. French *U.S.A.*, Sherman Johnson *U.S.A.*, R. P. Christensen *U.S.A.*, R. H. Kaushik *India*, F. A. Tiongson *Philippines*, R. J. Hildreth *U.S.A.*, C. P. Hamilton *Australia*.