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(3) THE EXPERIENCE OF LARGE-SCALE
COLLECTIVE AND STATE FARMS OF THE
U.S.S.R.

I. S. KUVSHINOV

*Agricultural Economics Department, Tuniriazhev Academy, Moscow,
U.S.S.R.*

IT is a great privilege for me to report on the experience of large-scale agricultural enterprises—state and collective farms.

Socialist economy, founded on social ownership of the means of production, follows a unified plan in keeping with new economic laws basically different from those governing capitalist economy. At all stages of planning and administration attention is fixed on the most rational and effective use of material, labour, financial and natural resources, and on decreasing the labour input.

In our country collective farms (Kolkhoz) and state farms (Sovkhoz) have a long history. The gradual but steady transition from small-scale private farms to collective cultivating and the abolition of exploitation have created the conditions in which the toiling peasantry can display enterprise, daring, and initiative in achieving higher labour productivity. They have tapped sources which ensure a new attitude of labour—socialist emulation. The land belongs to the people who cultivate it.

Far-reaching developments have taken place in the number and sizes of collective and state farms since the system was established. The average size of peasant households in 1913 was 7 or 8 hectares. By the beginning of 1961 Soviet agriculture numbered 7,400 state farms and 45,100 collective farms. The average extent of farm land per state farm in 1960 was 24,000 ha., of which 8,300 ha. was sown land; the respective figures per collective farm were 5,500 ha. and 2,300 ha. The number of people engaged in the socially owned economy of the collective farms in 1959 was 21.5 million; at the technical and repair stations, 0.2 million; at the state farms, 4.5 million. Radical changes have taken place in the amount of machinery thanks to socialist industrialization. By the end of 1959 the agriculture of the U.S.S.R. had 1,090,000 tractors, 526,000 grain-harvesters, 776,000 lorries, and millions of other complex farming machines. While in 1913–17 the available power per person engaged in agriculture was 0.5 h.p. and in terms of sown area the rate was

The idea of developing these lands was advanced in 1954 by N. S. Khrushchev, now Head of the Soviet Government. He envisaged a planned and large-scale utilization of the opportunities opened up through the development of virgin and unused lands, the creation of big, mechanized state farms in the unpopulated areas, and the utmost development of the eastern areas of the country. A comparatively short period of seven years has passed and the aspect of the undeveloped steppe has changed beyond recognition. The power of Soviet industrial production, the huge state allocations, the heroic drive of the people, the young people in particular, for land development have resulted in the creation of really big enterprises. An area of great opportunities for the production of grain and other products has taken shape in the Tselinny Territory in Kazakhstan, which is no longer a deserted steppe. Highways and railroads have been built there, and large grain-elevators; electricity has been brought to the townships and is commercially utilized. Large-scale enterprises and complete communities have been established in the virgin land development areas. They are examples of high standards of farming, skilful management, and of qualified workers and specialists in agriculture. The total virgin land area developed in the country is 42 million ha., including 25 million ha. in Kazakhstan. Another 5-10 million ha. are planned for development in the near future. This ensures the growth of the volume of production and of the state purchases of grain.

From 1949 to 1953 grain production in the U.S.S.R. increased from 80.9 to 113.2 million tons, and in the virgin land development areas from 22.4 to 45.0 million tons. Grain purchases increased from 32.8 to 48.6, including an increase in the virgin land development areas from 9.8 to 23.1 million tons. The development of virgin lands in Kazakhstan has resulted in far-reaching social and economic changes. The population has grown by 3 million people, with an even increase in town and country. The cultural revolution in the U.S.S.R. has told most beneficially on the life of the peoples of the Soviet orient, and on the life of the Kazakh people in particular. This republic, with a population of 10,400,000, has 251 people with higher and secondary education per 1,000 and 448 per 1,000 of those in employment. It also has 178,000 engineers, technicians, and agronomists, 63,000 doctors and para-medical workers, 150,000 teachers, research associates, and other intellectuals.

The establishment of new farming areas has proved to be highly effective. This is brought out by the data of work done by the large-scale state farms in all the regions of the Tselinny Territory and in the

other virgin and unused land development areas. The total net profit drawn by all the farms in the Oktyabrsky district in that Territory in 1959 was 2.13 million roubles. The land development work in the district and the construction of fourteen state farms with a sown area of 474,000 ha., including 469,000 ha. under grain, had called for state investments totalling 3 million roubles, while the returns from the sale of state farm products in four years gave the State budget 12 million roubles. Hence, the net profit drawn by the State from all the state farms of the Oktyabrsky district in the Kustanai region is 9 million roubles.

Similar striking instances could be found in Siberia. The Altaisky state farm in the Smolensky district of the Altai Territory has been founded on virgin lands and has comprehensively developed field husbandry. While concentrating on wheat it grows fine crops of legumes, row crops, and maize for silage.

The production cost of a centner of grain at the collective farms in 1959 was about 2 roubles, which shows the effectiveness of land cultivation, mineral fertilizers, modern machinery, greater investment, hydro-development, and irrigation.

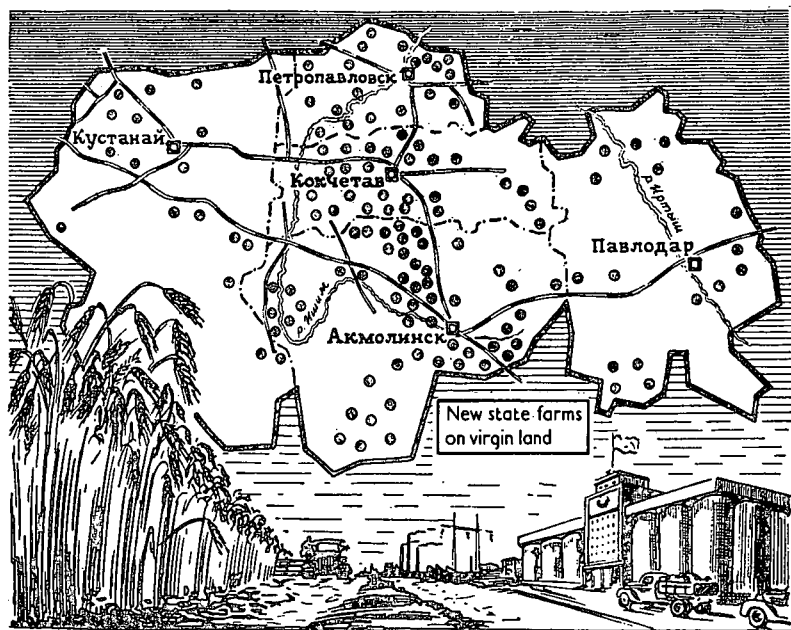
It has been shown by estimates that state investment in the development of virgin lands in the U.S.S.R. has returned large profits. In 1954-60 the State invested an extra 4.4 billion roubles in the development zone. Over the same period, the State drew, from the marketable grain increment only, over 7.6 billion roubles of additional profit. It follows that the virgin lands have returned all the expenses involved and are yielding a big accumulation of capital. At present, the virgin land development areas account for 40 per cent. of grain procurement in the country.

Tselinny Territory, with 506 state farms and 412 collective farms, has been established in the northern part of Kazakhstan. The arable area there is 20 million ha., the area sown to wheat being 19 million ha. The collective and state farms of this territory have 106,000 tractors, 77,000 combine harvesters, and 60,000 lorries. This development has made it possible to increase the specialization of production. The foremost collective and state farms are making skilful use of the virgin land and are producing more and more grain, meat, milk, and wool. In 1961, 287 kg. of milk were produced *per caput*, 41 kg. of butter, and 41 kg. of meat in carcass weight.

The average annual milk production increment in 1954-8 was 10 per cent. This growth of *per caput* production has taken place as a result of overall increases in milk, meat, and butter production. The following production was recorded in 1961: milk, 62.5 million

tons; meat (dressed weight), 8.8 million tons; butter, 894,000 tons. The development of animal husbandry in the virgin land areas has been launched on a large scale too. The measures taken in this field may be compared with those in the sphere of land development. In keeping with a master plan, animal husbandry is getting resources and machinery for mechanization. The farms are increasing the volume of industrial crop production. The average cotton yield has reached 21.7 centner per ha., which is higher than in other cotton-producing countries.

Tselinny Territory (the region of virgin land development)



The map was prepared by the employees of the Kazakh Ministry of State farms, and shows the new wave of development of virgin land. There are now more than 500 state farms in Tselinny Territory, and an additional 130 grain and livestock State farms will be developed, covering a further 2.5-3 million hectares of virgin land

The farms are equipped with highly efficient modern machinery. The problem of mechanizing grain production has been solved for all practical purposes. The following figures, for 1959, illustrate the degree of mechanization of the basic field operations: ploughing, 98 per cent.; grain-crop harvesting by combines, 93 per cent.; sowing of spring crops, 97 per cent. The problem of integrated mechaniza-

tion and the introduction of complete sets of machines is a standing objective of the State and a subject of study for the research institutes and for the associates of higher educational establishments. Farm economists conduct extensive research into the effectiveness of machinery under various conditions.

To measure the economic effectiveness of machinery we compare : (1) the increase of labour productivity, (2) the decrease of cost of operation, (3) the time scale of depreciation.

The sown area to tractor ratio in grain-producing districts is 100 ha., which is deemed economically expedient for the given conditions.

The Government's objective in making additional allocations to agriculture is to render it independent from the whims of nature. Farm production has been organized in such a way that every year, irrespective of climatic conditions, it would ensure the necessary products to meet all the demands of the population. A reliable means of obtaining stable harvests is hydro-development and irrigation, watering, and reclamation of millions of hectares.

Particular attention has been devoted to tapping every potentiality in agriculture, to the propagation and introduction of scientific achievements, and the experience of the foremost farmers. Their achievements serve as an example, indicating how to make the best of local natural conditions and zonal features. It is planned to obtain not less than 50 centners per ha. of maize in zones favourable for maize cultivation.

The increase of labour productivity is a result of government policy applied to agriculture. From 1934 to 1958 labour productivity in agricultural production increased three and a half times. One of the factors which have facilitated this, and the introduction of the latest machinery, is the improvement in the standards of farm management and of training specialists. By 1 December 1960 there were 381,000 farm specialists with higher and secondary specialized education, and 2,400,000 tractor drivers, team leaders, combine-harvester operators, and lorry drivers working at the collective farms, technical and repair stations, state farms, and auxiliary enterprises.

Large-scale research is conducted into the elaboration and introduction of a rational system of zonal farm management and into the implementation of a scientifically founded specialization of the larger farms. In this connexion economists are studying the problems of optimal sizes of collective and state farms. There is no doubt that the sizes of collective and state farms differ according to type of enterprise, its main enterprise, and the natural conditions, including

the relief of the terrain. The scientifically determined optimum size of large-scale agricultural enterprises is near to the actual. In the U.S.S.R. the average size of state farms is: 26 thousand ha. of agricultural land, 631 workers; of grain-producing state farms, 37.5 thousand ha., 775 workers; of cotton-producing state farms, 12.7 thousand ha., 1,981 workers; of dairy and beet-producing state farms, 15.8 thousand ha., 620 workers, and 2,056 head of cattle.

The Soviet Union has accumulated extensive experience in the field of rational production management in collective and state farms and in developing them into highly intensive and profitable enterprises. Theoretical conclusions are tested by the experience of 2,300 pilot farms. Scientific analysis of the experience of these enterprises over a long period under socialist conditions helps to confirm the conclusion that the basic requisites of their successful advancement are:

Firstly: Carrying out of the Lenin co-operative plan. The voluntary transition of small-scale peasants to the system of large-scale farming. Under the new conditions of large-scale farm management, all branches can develop their production and enjoy larger capital investment. This major factor results in radical changes in the pattern of farming operations: intensification of field cultivation, the use of mineral fertilizer, the perfection of implements and machines, greater use of machines, and more employment of qualified workers.

Secondly: Large-scale use is made of state credits extended on privileged terms, with the objective of increasing the volume of production and the proportion of marketable produce. Prices are set by the Government in order to cover cost of production, necessary profit in the collective farms for increasing production, and for satisfying the cultural and material needs of the members.

Thirdly: Rational utilization of land, modern machinery, methods of progressive farming technology, application of irrigation, and hydro-development, use of electricity—all this can be carried out on a large scale, taking account of zonal features and with an economic advantage only realizable in large-scale enterprises. There the increase of farm products and of labour productivity proceeds at a rapid pace. The receipts and payments of collective farmers and of the state farm workers are growing. The production cost per unit of produce is reduced.

Over all is the assistance provided by the Soviet State. These successes have not been achieved quite smoothly. We have had some difficulties. There was insufficient experience. In the early years our agriculture received few credits and had few technicians, skilled

labour, or agricultural experts, especially in the collective farms. Lack of knowledge of natural zonal conditions made capital investment ineffective in some cases. Sometimes the balance between agriculture and industry was unequal. Prices of some agricultural products were too low, and reduced the agriculturist's incentives. Economists failed to notice that all past experience showed that the first need for agricultural progress was the development of scientific and technical improvement and provision of material incentives for labourers. But now we have all the conditions necessary for the stimulation of the peasants, members of the collective farms, of the state farm workers, and the agricultural experts. The allocation of funds for agriculture has been increased, modern techniques are used, the whole technology of production is rapidly developing, and agricultural productivity rapidly increasing.

LUIS A. FOULON, *Universidad de Buenos Aires, Argentina*

Professor Kuvshinov's paper has suggested a series of commentaries. The subject is complex and controversial, and has given rise to impassioned discussions in very different surroundings. From an analysis of the paper it would seem appropriate to distinguish between two concepts: the scale of enterprise and the legal control of the land, called the *holding* thereof.

To start with, I shall make a few observations on the concept of large-scale production. Within the variables that characterize agrarian structures it is the dimensions of large-scale enterprise, its intensity and scale, which obviously stand out most concretely. In the Argentine large-scale developments are well known, especially in the cattle-raising regions of the pampas of Patagonia and Mesopotamia. I have had the opportunity of serving as administrator on schemes concerned with both agriculture and cattle-raising on a very large scale, with areas varying between 5,000 and sometimes even 30,000 hectares, all intensively worked.

From a strictly economic point of view the desirability of large-scale development may be accepted and, although the reasons are well enough known, I take the liberty of pointing out at least the main ones.

In the first place, special attention can be given to a more scientific use of the land and the increased possibility of introducing highly efficient measures for its conservation; similarly, machinery can be used more efficiently and more suitable rotations adopted, thanks

to increasing the number of enterprises. Labour can be used more efficiently in a context of greater continuity and uniformity. Besides this, large-scale operations reduce residual losses which may be ruinous in smaller operations; also there is the possibility of negotiating on the basis of larger consignments, which give the producer more favourable terms in his dealings with the market, and the ability to acquire whatever is necessary for the normal processes of development. Finally, one can have one's own technical advisers, social services, and personnel training schemes, and can employ more highly qualified and more specialized labour. There is no end to the arguments which point to the concept of colossal units of production limited only by the law of diminishing returns. Within these limitations, the advantages of large-scale enterprise would be confirmed, but from a moral and social standpoint the question is different.

In a well-considered agricultural programme which attempts to harmonize the activities of the agricultural and non-agricultural sectors of the community, it would be impossible to ignore the moral reactions which should characterize the family units which make up a regional economy founded on free enterprise. It is essential to consider the peasants' welfare. This does not consist exclusively of material factors but also, and fundamentally, of factors concerned with his spirit, his character, and his idiosyncracies.

Already in this conference the tendency of some economists to limit themselves exclusively to economic concepts based on schemes of maximum profit has been criticized in no uncertain terms. Attention has been drawn to the need for considering points of a moral nature, through the application of the principle of comparative benefits, that universal principle which leads us to evaluate both the economic and moral benefits.

Amongst the disadvantages of large-scale development, within an economic and social structure based on free enterprise, we would have the following :

1. Large-scale development lessens the efficiency of peasant society on account of the numbers in a state of dependence.
2. Large-scale enterprise grows at the expense of agricultural economic units, with the consequent concentration of production factors in a limited number of directive capacities.
3. The spread of large-scale concerns means a gradual reduction of individual abilities in management, resourcefulness, and initiative, and the loss of incentive to do agricultural work, so liable to risks and

low returns in its constant struggle with natural forces often impossible to master.

4. In developing economies, in which there may be a lack of harmony between agricultural and non-agricultural activities, the spread of large-scale development may mean serious rural unemployment on account of the inability of industry, commerce, building, communications and other non-agricultural activities to absorb the surplus population from the agricultural community. The normal increase in the rural population, observable in any economy, is augmented by those workers who have been made redundant by the increased efficiency characteristic of large enterprises, especially when it is the result of intense mechanization. It must be admitted of course that when industry shows exceptional growth as a result of excessive protectionist policies, there may turn out to be a shortage of agricultural labour owing to the attraction of the better salaries paid by protected industry. Agriculture, if conducted in large units, can meet this problem.

Moving on to the legal control of the land we may contend, in the first place, that it is too risky to regard collectivization of the land and of development as constituting the ideal system towards which all efforts at agrarian reform or straightforward integral economic programmes should aim. Collectivization of the land cannot be regarded as a universal remedy. On the contrary, whenever it is intended, one should examine the natural conditions of the country, if not of each region within it, bearing in mind its political and social structure and, especially, the way of life of the peasant masses, and their technical, administrative, economic, and financial capabilities.

In the Argentine, its 200,000 farmers, tenants, or partners have spent several decades hoping to become landowners at the head of independent family enterprises, and it would be very dangerous to speak to them about collectivizing the land. In Europe, especially in Italy, Spain, Switzerland, Germany, and France, to mention just a few, all the characteristics of free enterprise are in evidence: freedom of planning, organization and management, and freedom for farmers to use their own labour. I certainly do not intend to defend anarchic individualism. On the contrary, I accept whatever limitations may be necessary for the general good so that the land and all other productive factors can contribute to the best social advantage. It would be well to remember that not a few countries possess an economy based on free agricultural enterprise and are extraordinarily successful, whereas some collective systems have had their failures.

Consequently it may be said that while collectivization can be

successful in certain environments, it should not be accepted as a universal pattern to be applied indiscriminately and without consultation. I would point out in conclusion that many of the advantages attributed to large-scale development, whether collectivized or not, can be achieved by co-operative methods.

CHOMBART DE LAUWE, *Ecole Nationale Supérieure Agronomique de Grignon, Seine-et-Oise, France.*

Professor Kuvshinov has presented us with a most optimistic picture of the results of the large undertakings in the U.S.S.R. Let us share his contentment to some extent. But how many countries are there that can discover out of the blue, within their boundaries, 100 million acres of virgin land easily exploitable, with scores of millions of acres in reserve? Thus, Professor Kuvshinov's information augurs well. Hungry countries will at last be able perhaps to benefit from the immense riches of the U.S.S.R.

Having said this, I should like now to underline one essential point in Professor Kuvshinov's account. He says that the rapid progress of agriculture was made possible solely by the voluntary fusion of little peasant enterprises into collective enterprises where machinery is employed. That is a great simplification of the agricultural problem. Why should not a Danish economist boast in a similar way that the spectacular results of Denmark were achieved through capitalistic family exploitation? This is not to deny the importance of the Russian enterprise; but let me make two observations.

First, in order to work properly, large enterprises must meet at least six conditions: remuneration which will act as a stimulant, very advanced technical organization, an administrative set-up which does not degenerate into bureaucracy, well-kept records both in kind and money, very advanced standards of all the enterprises, and lastly an undertaking organized into balanced and specialized sectors of production. Without these minimal conditions, waste is much more widespread than in family farming.

The second point concerns the possibility of determining by linear programming the optimum size of enterprise in any particular region. How can the results thus obtained be properly utilized? In two different directions: first, by knowing what can be done; second, and more important, by knowing what cannot be done. Armchair economists make production factors dance around, and assume too often that they can be moved anywhere. But rural economists, who

have to discuss matters with the farmers on the farms, know that the human element must be taken into account. Thus, it is possible for various forms of cultivation to co-exist, in every country, within any framework. Should we not recall that in the Soviet Union itself in 1958 individual auxiliary farms of the kolkhozes produced half the meat and half the milk? No doubt, large-scale production economies are real, and family farming has its faults; but the faults are not all there all the time in every case. Let us not forget the old French proverb, which could well be Russian: 'If you want to drown your dog, say that he has rabies.'

C. VON DIETZE, *Freiburg University, Germany*

Nearly two years ago, at the invitation of the Faculty of Agriculture of the University of Leipzig, I took part in a discussion on the size of agricultural holdings. Leipzig is situated not in the Federal Republic, but in the other part of my country. There, we had a perfectly free discussion, just as we have in this International Conference. The sessions began with papers and reports which took it for granted that only large socialized holdings are efficient, and that they are superior to all other forms, particularly to the family farm. To such allegations I could only reply that this is not what we would call a scientific analysis, but the display of a dogma. All the statistics and facts which do not fit into the dogma are disregarded.

I should like to make two short comments on Professor Kuvshinov's paper.

(1) He has given figures of the agricultural production for the years 1910-13 and 1959, 1960, &c. It would have been most useful to have figures for the year 1928, before the beginning of collectivization, which would show us the effects of the New Economic Policy (N.E.P.), and also perhaps for 1932 or 1933, by which time we could see the consequences of the general collectivization. Moreover, it would be very desirable indeed to have figures for the rise of production during the time of the agrarian reform before 1914, when chances of progressive production and of development were given to peasant farmers who manifested the qualities of entrepreneurs.

(2) Professor Kuvshinov, claiming a scientific analysis, says that the peasants are entering the collectives voluntarily, and that the voluntary transition of small-scale peasants to the system of large-scale farming is a basic requisite of successful advance. I must say that this astonishes me. I should be happy, and I am sure all of us

would be happy, if we could agree that it is only voluntary transition which can bring about collective holdings. If we can agree on this question, which touches the fundamentals of human ethics, we shall render an immense service to the whole world.

YEHUDA LOWE, *Ministry of Agriculture, Israel*

Professor Kuvshinov gives an example of the result of an analysis of statistical data, quoting the produce obtained per man and per day and the indexes between 1954 and 1958. So far as efficiency in animal husbandry is concerned, I doubt whether it can be expressed in productivity per man-day instead of by the ratio of output of produce to input of feed. Labour plays a rather unimportant part in the cost of production of milk, wool, and meat. Costs are often much higher on a farm with high labour and low feed efficiency than vice versa. If a high degree of mechanization in cropland may be (though it need not be) an indication of greater efficiency, it is certainly of very little value in terms of economy in animal husbandry.

May I make a second comment, on the question of land reform which was raised earlier? Here the experience of Israel may be mentioned because it can be justly claimed that the new system of land tenure introduced there at the beginning of the century became of vital importance for the development of that country.

A large majority of the land is held in Israel by the Jewish National Fund. This fund derived its means from voluntary contributions from the Jewish people all over the world. The land forms the inalienable property of the nation as a whole and is leased to the settlers in hereditary leasehold for forty-nine years with a right of automatic renewal after the lapse of this period. In this way the settler is not burdened with the necessity of investing in land purchase and still enjoys all the security of a cultivator-owner. He rightly regards the land as his own property and is ready to invest in its improvement. All kinds of settlements, family farms, as well as large-scale collective farms, are founded on Jewish National Fund land. Rent is fixed at a low rate according to the value of the land, being subject to revaluation from time to time. The fact that every settler can have access to land in hereditary leasehold has put an effective brake on land speculation which otherwise might have had an obnoxious effect on land prices because of scarcity of land and high density of population. This unique system of land tenure, which is in keeping with the tenets of the Bible, may well be said to have had a decisive influence on the success of settlement activities in Israel.

S. KRAŠOVEC, *University of Ljubljana, Yugoslavia*

We in Yugoslavia also believe in large agricultural units, though not in all circumstances. After some not very happy experiences with peasant work co-operatives, our policy is to advance agriculture along the following two lines: (1) By so-called co-operation in production between the individual farmer and his co-operative. The farmer keeps his ownership of the land, but he co-operates in cultivation, if he wishes to do so, on one or more plots of his land. The farmer's inputs are labour, manure, oxen or horses, and land rent. The co-operative's inputs are mechanization, fertilizers, selected seeds, and expert advice, &c. The output is distributed between the farmer and the co-operative in proportion to their inputs. Success depends on the wisdom of the co-operative in not insisting on too high a share of the output. (2) By State farms, as they are reorganized. As with urban factories, railways, navigation companies, &c., so have State farms ceased to be owned and managed by the government and their officials. They were handed over to their work collectives for self management. We call them social estates. They are autonomous in matters of production, prices, and investment. They may compete with each other in prices, &c., and profits are distributed among the personnel. As a result, personal interest and responsibility have risen.

These institutional changes alone would not have been sufficient. At the same time these estates were given increased shares in the federal investment fund. A very intense and close co-operation with scientific institutes has been developed, increased attention is being paid to higher education and specialization of personnel, the standard of living has been increased to attract labour.

If Yugoslavia is one among four or five countries quoted in an F.A.O. report as having raised productivity above the growth of population, this achievement may be attributed primarily to the second of the two ways which I have described, i.e. to the large social estates. The experience is so striking that the common opinion in the country is that if we had new virgin lands available, we should doubtless create only social estates on them, with agricultural workers and employees on the basis of self-management.

MANUEL MESA A., *Autonomous National University, Mexico*

I do not think there can be any doubting the great advantages of large-scale over small-scale agricultural enterprise. To attempt to

show that the small family agricultural enterprise has greater advantages than the large-scale enterprise as regards technical development and agricultural progress would be the same as trying to show that it is better for a cobbler to make shoes than for a modern footwear factory to do so. This is what some people doubt and thereby do the Soviet system an injustice. The problem is to know which is the socio-economic organization best capable of adopting one or other system. In the United States of America, for example, the concentration of agricultural property in few hands is evident, and has led to the gradual destruction of small landowners' property. In the Conference held three years ago in India, we learnt that in one part of the United States small landowners or farmers were leaving the development of their agricultural estates in the hands of large concerns. This is clearly a very serious drawback in a capitalist country where large-scale agricultural enterprise is bound to be harmful as it is interested only in profit and in perpetuating bad conditions for its workers. But when it is a matter of a large socialist agricultural enterprise where profit is not the aim and where production is planned to meet consumer demand, this kind of development must be advantageous. The only exceptions would be in certain places where topographical or orographical conditions make the organization of large-scale development impossible.

H. L. STEWART, *United States Department of Agriculture, U.S.A.*

I wish to make two points. They occurred to me first in connexion with Dr. Andal's paper but I think they are pertinent also to the subsequent papers. The first may be construed as purely semantic, but I think this is a case where semantics are important in policy decisions, particularly in the developing countries. The distinction I would make is between the terms family farm and small farm. In our country a family farm, like any other family business, is considered to be a unit in which the family provides most of the labour and management, and it assumes an appropriate share of the risk. It may be large or it may be small. Frequently in our terminology we confuse family farms and small farms. We have a place for both in our country. The efficient family farm can be justified in terms of efficiency as well as by its social and ethical values. One of our most efficient farms is the family farm which is large enough to use efficiently a modern set of machinery. The fact that these farms are efficient is demonstrated by the fact that their number is increasing while the number of larger than family farms is decreasing. This is so

despite all the information you have heard about the increase in large-scale farms in the United States. It is also demonstrated, I think, by the fact that we have reached the point where only 9 per cent. of our population is producing all the food we can use, as well as all that which we have been exporting, and that which we have been storing in surplus. I do not believe that any other system has been able to match this record.

The second point I would make is that we must allow for continued growth in our farms. The efficient family farm has been increasing in size because of two factors. One is the adoption of technology which has enabled us to increase efficiency, and the other is because of the increasing standard of living. We must not overlook the fact that, in establishing these farms, we have to provide room for continued growth. Otherwise we shall lose our number one place in efficiency. To this end I would ask Dr. Andal, if he has time, for a little elaboration on his statement that in some cases provisions have been made for subsequent additions to the farm units that they are setting up in his country.

COSTIN MURGESCO, *Academy of the Rumanian People's Republic, Bucharest, Rumania*

Professor Kuvshinov's report has a great theoretical and practical interest which lies not only in the abundance of information on the present state of Soviet agriculture but also in the fact that the problems suggested for discussion open the way to a wide exchange of views on the great socialist enterprise in the province of agriculture. I should like to emphasize especially the close connexion between the process towards the large-scale agricultural enterprise and the introduction of a rational system of agriculture. The large farm of the socialist type represents and must represent not only a great transformation in the structure of property, but also the transition to a system able to yield a maximum quantity of products per unit of area with a minimum of expenditure in human labour and means of production. I think that we all agree on this being the main sign of progress in agriculture. To this end, it is not enough to modernize agricultural technique; it is also necessary to ensure a scientifically planned territorial distribution of agricultural production. That is why Rumanians, side by side with other measures aiming at new progress in agricultural production, have conducted complex inquiries to demarcate territorial zones, homogeneous from the point

of view of economic and geographic conditions, in order to establish the best economic plan in relation to national needs, local requirements, and the needs of producers.

This scientific work was carried on for seven years by teams of scientists, under the patronage of the Rumanian Academy and the Ministry of Agriculture; it is now the basis for a territorial division of agriculture into production zones.

The division into zones allows the State organisms to direct agricultural development in each unit in order that production development may answer the needs both of producers and of the economy as a whole from time to time.

There is another problem. Introducing a rational system of agriculture requires that the optimum size of a large socialist enterprise be scientifically determined. The size is determined by very different factors. An International Conference on these problems convened in eastern Germany last year has shown how many elements and variants can be taken into account. Experience and scientific inquiries carried on in Rumania have shown that, in the special conditions of our agriculture, best results can be achieved in collective farms of around 5,000 acres, but varying according to natural zones. In the zones of the plain, where cereals are mainly grown, the rational area of a collective farm is of 3,700 to 6,200 acres; on the hills, of 2,500 to 3,700; in vine, fruit, and vegetable farms, 1,200 to 2,500. In farms of these sizes, management can best ensure the most rational utilization of land, labour, and natural and economic resources; it can best apply agro-technical measures, advanced experience, and the discoveries of agricultural science. In State farms, with a higher level of mechanization and organization, sizes of farms are different.

G. BARBERO, *Istituto Nazionale di Economia Agraria, Rome, Italy*

From the point of view of densely populated countries in their initial stages of development, I find there is an inconsistency between Dr. Andal's statement that an economically optimum size of farm may have to be reached by progressive stages, and his statement that perhaps the most common failing in recent settlement programmes has been that the size of unit has been too small.

If we accept the concept of gradual adjustment, and often there is no political alternative, we must recognize that the failure is not to be imputed to the initial small size of farms. This is often a political necessity, given the resources available at the moment and given the desire for individual farming units. The failure stems rather from the

short-sighted views of planners who do not envisage land settlement patterns in such a way that gradual enlargement of farming units, or the merging of individual units into co-operatives, may be possible as soon as non-agricultural opportunities become available and land becomes a less-scarce factor.

I believe that land settlement projects or land redistribution schemes must be considered as a necessary step towards the overall social and economic development of a country. The failure of such ventures in the long run is often caused by the failure of government and the responsible agencies to provide flexibility so that farm units may be adapted to the changing social and economic relation of agricultural development to the overall development of a country.

D. BIRD, *Bison Associates, New York, N.Y., U.S.A.*

I should like to preface my remarks by acknowledging the doubtless unparalleled accomplishments of the Soviet Union in its development in the course of four years of new lands which, to give their area a Western setting, occupied a region as large as all the producing grain areas of western Europe or that of seven north-central states of the United States of America. I should like to emphasize that, concerning Kazakhstan, the marginal area with regard to this complex, the experience of the new lands scheme in its eight years of operation, has not proved whether the risks of developing marginal land from a climatological point of view is a failure or a success. It would seem that a longer period will be necessary for the exploitation of these lands to see whether the eventual dust-bowl conditions warned against by certain technicians and economists will occur.

I also wish to acknowledge the fact that the publishing of Soviet statistics on agriculture, begun essentially in 1956, has greatly helped economists in the West to study Soviet agriculture. I see no particular reason, beyond the historically and psychologically built-in tendency of those of us who live in countries which have had more consistent and more detailed distribution of statistical data over regularized yearly periods—beyond this tendency I see no reason to doubt the statistics published by the Soviet Central Statistical Institute and by the statistical departments of the various Soviet republics since 1956. Rather, my particular question relates to the lack of qualification of the statistics used in certain cases and in other cases the frustrating lack of statistical schedules without which we in the West feel uncomfortable in making evaluatory studies. Although one could take up an entire session in elaborating the points which

could be raised from reading the Statistical Institute's schedules, I should like to ask Professor Kuvshinov if he would be good enough to discuss the meaning of the so-called *barn yield* (*ambarnyy urozhay*) being used in the U.S.S.R. to determine the statistics of harvests. Before and immediately following the war, Western economists were aware, as were their Soviet colleagues, of the deficiencies of the so-called *biological yields*. The barn yield, of course, is more meaningful. My study of the statistics of yields in Kazakhstan, however, would lead me to believe that the barn yield shown in the present statistics would in fact better be called the yield after harvest or the yield behind the combine. If you take the statistics of grain yield, and I am referring specifically now to bread grains, in Kazakhstan and figure what part should be necessary for the population of that republic, and then subtract from the remainder the published statistics on shipments of grain and grain products from the republic, you will find that there is lacking an accounting of about 25 or 30 per cent. of the total barn yield. This difference, it would seem to me, is reflected in the grain which is lost after the harvest and before it is put in the barn.¹ Of course, in the Soviet press in February and March one sees the open criticism of the losses of grain in the period of harvest of the previous year. Losses are not only mentioned in trans-shipments from field to barn but in moisture spoilage both in the field and after storage in the barn. I wonder whether Professor Kuvshinov would comment on the use of the phrase barn yield.

O. SCHILLER, *University of Heidelberg, Germany*

Since I lived for many years in the Soviet Union, I would like to say a few words on the paper of Professor Kuvshinov. He gives the impression, mentioned already by our friend from France, that it is only by collectivization that one can achieve the size of production units necessary for the utilization of agricultural machinery. I think this is a wrong assumption. Mechanization has made extraordinary progress in recent years in countries with an agrarian structure of peasant farms and small-scale farms such as the Federal Republic of Germany. This can be seen from the figures given in Professor Wilbrandt's paper.

The horse-power per 100 hectares of sown area in the Federal Republic of Germany is greater than in the other part of Germany

¹ It has been suggested that the gap in accounting for the barn yield may be filled, in part at least, by grain fed to livestock. Other figures, however, on stock feeds include no bread grains. Whether or not bread grains are, in fact, fed is hard to know.

where agriculture has been developed on the pattern of the Soviet Union, and it is greater even than in the Soviet Union with her mammoth farms. This shows that a giant farm is not a necessary precondition for mechanization. I should like to ask whether any scientific studies have been made in the Soviet Union on the minimum size of farm and the minimum size of field to allow a rational utilization of the different types of tractor and combine harvester in the Soviet Union.

Scientific studies carried out in Germany have shown that the middle-sized tractor of 25 h.p. can be used in a peasant farm in a rational way if the single fields are not less than half a hectare in size.

Modern techniques are so advanced that we can adapt machinery to the requirements of a peasant family farm and even of a small holding. We did not realize this in Germany when we started mechanization. There is no justification now for making machinery the yardstick of an adequate size of farm. The yardstick should be the requirements of human beings and the agrarian structure which coincides with the wishes of the rural population.

I should like to ask too whether there are studies in the Soviet Union on the optimal size of farms. Professor Kuvshinov tells us that the average size of a sovkhoz is approximately 8,000 ha. of sown area, and of a kolkhoz approximately 2,000 ha. I recall that some thirty years ago in the Soviet Union there was a stage when the sovkhos grain farms were gradually enlarged more and more. Later they came to the conclusion that they had gone too far.

Stalin himself blamed his agricultural economists for their so-called giant-mania, and ordered a reduction in size of over-sized farms. Some years ago the need for machine-tractor stations was argued on the ground that it was only by combining a number of kolkhoz farms that machinery could be used in a rational way. Later on, the dissolution of the machine tractor stations was an admission that this argument was not right. I have the impression that many Soviet farms are over-sized at present and that one day there will be a reduction again.

M. CÉPÈDE, *Institut National Agronomique, Paris, France*

Among the classical causes put forward by our colleague de Barros to explain land parcelling, there is one which does not fit the facts in the open-field regions in north and east Europe, where the problem of parcelling is particularly acute. I refer to the effects ascribed

to the Civil Code, known as the *Code Napoléon*, already considered by Le Play to be a 'machine to crumble the land'.

In fact, if we compare the number of parcels of land in the cadastral survey of 1880, and even more the most recent one, with that of 1820, we notice, at least in many French villages of this region, a constant and often very important diminution in their number. Two questions can be asked: why is land still so much parcelled in these regions (although less than at the time of the French Revolution), and how has the reduction in the number of parcels taken place? The answer to the first question is that the narrow-strip structure became bad for cultivation only after compulsory rotation cropping was replaced by a system of free cropping. With this freedom it became less useful to have parcels spread out all over the whole land. To the second question it can be answered that the division into parcels in accordance with the Civil Code led to widespread selling of parcels to neighbours who regrouped them. In these circumstances, on land already much parcelled and with the legal possibility of pushing parcelling to absurd extremes, re-grouping became the more necessary. This proves once more—and this will be my only comment on Professor Kuvshinov's paper—that life is dialectical.

M. E. ANDAL (*in reply*)

Professor Horrying has outlined very clearly some points to consider when making an economic evaluation of reclamation projects. With these points I fully agree. To the extent that labour is otherwise unused it would not represent a real cost of developing a project. I suggest that the same applies to unused equipment and other capital.

Food shortages may occur in an emergency and supplies from alternative sources may not be available at any price. For such emergencies government investment in developing land may be considered as insurance. Apart from food shortages of these kinds, trade could be considered perhaps as an alternative source of food supply.

Someone stated that the disappearance of small farms represented exploitation. But as technology advances, individual farmers are able to operate larger units. Consolidation is a natural outgrowth of this condition. A reduction in the number of small farms represents, therefore, not an exploitation of these farms, but opportunities for advancement either by enlarging farm units or by moving to more remunerative occupations.

Mr. Stewart developed more fully than I did the concept of the family farm and with his concept I agree. He asked about provisions for subsequent enlargement of farms settled in the Prairie Provinces in Canada. What is involved is simply the retaining of some parcels of land for additions to existing farms, rather than allocating all parcels of land in current settlement.

Professor Barbero mentioned that it is sometimes a political necessity to have very small farms. That may be so, but it is the duty of the economist to point out the cost of this situation in terms of economic development. It may well be that decisions on settlement projects have to be influenced by other considerations, but the economic cost of these alternatives can and should be pointed out. The choice must then be made by the appropriate authorities.

H. DE BARROS (*in reply*)

I shall be very short. The problem of *remembrement*, important as it is, is less important than the very big problems which were discussed later, the comparison between small- and large-scale holdings, between private enterprise, and co-operative and public enterprises.

Professor Yajima, if I understood him, thinks that egalitarian partition, when legally possible, is not one of the main causes of fragmentation of land, and refers to his country with which I am not familiar. Still, I think that for European countries at least, it really is very important. Of course, I recognize that it does not have any effect at all unless it corresponds to the peasants' deep-seated predilections (as I mentioned in my report). In this connexion, I should like to thank Professor Cépède for his remarks on the dangers of excessive generalization in agricultural matters. Professor Yajima does not ascribe as much importance to demographic pressure as I would (again, if I understood him properly). I should mention that I was speaking of demographic pressure as bearing almost exclusively on the primary sector as it did until recently. Today things have obviously changed.

As regards the influence of exaggerated land values on fragmentation, I agree that it is very great, especially when the prices are out of all proportion to the capitalized incomes.

I. S. KUVSHINOV (*in reply*)

Professor von Dietze asked about the voluntary uniting of peasants in our new type of enterprise. If you study Lenin's work you can see

that he insists that you can organize a new co-operative type of farming only on a voluntary basis.

As an agricultural economist I am certainly in favour of large-scale agricultural enterprise. No doubt there are limits to size. We are now beginning a new programme for the study of optimal sizes of agricultural enterprises, and we hope to use mathematical methods. The argument about the advantages and disadvantages of large-scale and small-scale enterprises is an old one, and Professor von Dietze and Professor Schiller are well acquainted with it. From the time of Aereboe and Brinkmann discussion of this topic has been very wide. There have always been people like Aereboe in favour of large-scale operations, and their argument prevailed over those who were in favour of small-scale farming. We are in a position to continue this type of discussion, and we have a very strong basis for our opinions in forty years' experience of large-scale socialist agricultural enterprises. We are in favour of large-scale co-operative farming.

But we are strongly against uniting small units into a large unit without regard to the condition of the country. Any such kind of co-operation should be done in the light of the economic and political factors involved. Professor Krašovec, in spite of the different conditions in Yugoslavia, is in favour of large-scale socialist farming. When Professor Chombart de Lauwe says that the effect of bad farm management would be worse on a large farm than on a small one, I can only answer that with bad farm management any farm, large or small, would be bad.

Our main task in farm management now is to improve the living conditions of peasants and workers on our large-scale collective and state farms. We have paid much attention to this for a long time. The average collective or state farm now has six men who have graduated from college—engineers and agronomists. Among us here we have a chairman of a collective farm who is an agronomist, graduated from a college. He has eight other agronomists on his collective farm. Also we have here a director of a large-scale state farm. He is an engineer and has held such a position for twenty years. So, with the leadership and direction and administration in the hands of such people, we have good farm management in our socialist enterprises.

Mr. Bird asked what was meant by barn yield. The barn yield is the actually harvested yield of the crops. He asked about the difference between yield and what we sell. The difference arises because some of the grain is consumed in the region and part is lost. The conditions for cultivation are very difficult because the whole crop has

to be harvested during five or six days. Also, we have to sow rather late. So, for the first few years we had big losses of grain. Now we still have losses but on a smaller scale.