

In the year 1933 they hope to have six million families on mechanized farms, operating 170,000 tractors. (At the present time we have about 600,000 tractors in the United States.) On these mechanized farms, 20 per cent of the total crop will be raised and 33 per cent of the marketable crop. From them they expect to get their wheat for export. It is interesting to note in passing that Mr. Campbell, our king of mechanical agriculture, went to Russia to lay out the first unit, a hundred thousand acre farm, 100 per cent mechanized. It is the biggest mechanized farm in the world. Mr. Campbell's Montana unit is 80,000 acres.

In the year 1933 the 160 million square meters of industrial housing space will move up to 213 million square meters. (Before they start to build an industrial plant they build workers' houses.)

The engineers required to carry out the plan have been carefully calculated. There are 20,000 engineers now at work; in 1933 they will need 42,000 engineers. They hope to be able to supply twenty thousand of these from their own universities and technical institutions but inevitable retirements and deaths will necessitate securing at least five thousand of them outside the country. They pay their foreign engineers very well—a chance for any of you who may perchance get squeezed in a merger! These foreign engineers are expected at the same time to give vocational instruction to 1,300,000 skilled workers in special technical training schools.

Physical production is to move upward from an index of 100 in 1928 to 236 in 1933, a gain of about 20 per cent a year. The actual figures that have come through show a gain of 24.3 per cent for the fiscal year ending October 1, 1929. The plan called for a 21 per cent increase, so that in the practical test the first year is up to schedule. I believe the whole five year plan will keep pretty close to schedule—failing a terrible crop famine, or foreign invasion or other acts of God.

In the year 1933 the seven-hour working day will be universal and industry will be working seven days a week for 360 days a year. There will be only five holidays when machines will stop. No engineer needs to be told of the saving in overhead expense that such continuous production will entail. Workers will be staggered by shift; Sunday is to be abolished. The men will work five or five and a half days, and the industrial flow will be kept continuous.

Some of their individual projects are enormous. The Dneiperstroy power plant, which our own Colonel Cooper is directing, is to be the largest hydro-electric power station in the world. I saw the beginnings of it when I was there. The whole rich Donetz Basin is being turned into one combined coal, coke, ore and chemical industry, operated as a unit. They are operating their oil fields as a unit without offset derricks and all the lamentable wastes of private exploitation. They respect the unity of the underlying pool. The Volga-Don canal will be far advanced; the Turkistan-Siberian Railway should be completed by 1933. Project after project is of a size to make even the country of mass production take off its hat. And we are helping them do it. Stuart, James and Cooke are helping to develop the Donetz Coal Basin; the General Electric has a contract of \$16,000,000 for equipment. DuPont is helping, and the Ford Motor Company is building a large automobile plant. Lockwood, Green and Company, the Newport News Shipbuilding Company, the Hercules Motor Company—some of our best American plants—have had their imaginations fired by the Russian experiment. It is a basic attempt to deal with the problem of functional control.

Let us lose our perspective we must remember that the per capita income of Russia in 1928, as far as it could be calculated, was about eighty-three dollars. At the end of the five year program it will have moved up to only about \$130, whereas our per capita income in the United States is now about \$750. The Russians have a long way to go, but if they keep doubling their industrial production every five years, some day they may catch up. In that day we can make a real comparison between the two economic systems.

The application of a Gosplan to the United States would, as I say, be difficult, but it seems to me that Mr. Hoover is inaugurating an approach to some sort of an economic general staff, a highly modified Gosplan, if you please. Perhaps I am just foolhardy enough to rush in where Mitchells fear to tread, but it seems to me feasible. I do not see why we cannot set up, even in this land of free competition and mergers, a sort of advisory economic general staff for the nation as a whole, together with a series of regional staffs. I think I would have these laid out by Mr. J. Russell Smith, who knows more about natural economic areas than

anyone with whom I have ever come in contact. Each of these areas having common economic problems could set up a purely advisory general staff which would serve as a central co-ordinating statistical body to gather the facts in respect to that particular region.

In regard to the plan for the region we could not of course be as careful and meticulous as the Russians but we could look toward some sort of effective control for the region. It should look toward the conservation of natural resources, particularly oil, lumber, coal, soils and fisheries. The general staff should also know the region so well that it could advise in respect to the conservation of capital so that no particular region is grossly overbuilt as to productive plant. We have today in the United States equipment to produce 800,000,000 pairs of shoes a year, whereas we can possibly wear out only 300,000,000 pairs. This general staff should pay particular attention to the question of technological unemployment. Machines seem to be displacing men faster than jobs can be found for them. It should advise in respect to the control of credit, so that the recent attempt to give the country back to the Indians on Wall Street will not be repeated. It should also serve as a propaganda body, hammering away at the doctrine of the economy of high wages. Business men are beginning to accept that doctrine quite widely, but A does not dare to increase his wages because he is afraid B, C and D will not do it also. He knows that if they do it will be profitable for him, but who shall start the ball rolling? The central planning board might get A, B and C together and urge them to increase wages simultaneously.

The whole question of regional planning in the sense of beautification is also important in America. We need great public works, highways, buildings, parks and recreation centers where we may balance the stresses and strains of our mechanized living. And I think it would be very useful to develop a strong competitive sense between the various regions in these matters. If the New England region took the lead in accident prevention, or parks, or what not, the others would be stimulated to meet and surpass the performance.

The staff should also advise in respect to industrial decentralization. The flood of electrical power over the country, with its high power transmission lines, is beginning to move industry out from urban

centers to rural districts. Locations must be carefully planned, however, for effective operation, because electric power cannot be turned into heat, unfortunately, and modern industries are ravenous users of heat.

They should act as a clearing house of information on those extraordinary advances in management, of which Dr. Wblman speaks in his paper and which you gentlemen have helped to bring about. As you know, nine-tenths of all the plants in the country have never heard of these things. Such a central planning staff could get the news about, thus raising the whole standard of management.

Finally, I should like to see these general staffs put Yale to work. As you know, Yale has appropriated five or six million dollars for its Institute of Human Relations which is to make a scientific, psychological study of what motivates human behavior. Here we get down to the fundamental basis of control. How do we act and how can we be made to act in unison? Can we adapt ourselves to any gigantic programs of functional control? Yale might feed into these regional planning groups its findings to the great benefit of all concerned.

It may be foolhardy to outline any such program as this, but I do feel very strongly the necessity for attacking this problem. Some day, somehow we have got to come to terms with our billion wild horses.

**James T. Madden.** Dr. Mitchell gave us a categorical answer to the question and threw it back to the Taylor Society in the form of a rather bare bone without very much meat into which we could put our teeth. I should have liked Dr. Mitchell to take up some of the practical questions connected with the credit, money and banking features of this era of economic change and the one ahead of us.

Is there any practical way in which we can arrive at some economic equilibrium? This indefinite term which Dr. Mitchell has analyzed so carefully for us connotes different things for different minds but it does have the general significance of a desirable end to be achieved. I think there is one step that could be taken almost immediately, without very much expense, toward helping us to get more facts than we now have. We have a lot of fact-finding

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