SUPPLY AND DEMAND--WAGES-PRICES

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Publications No. L54-10

INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

102 Dr. Richard B. Heflebower, Chairman, Department of Economics, Northwestern University, was born in Milliken, Colorado, 4 October 1903. He was educated at the University of California, specializing in economics of money and business conditions and the government control of prices. He received the degree of Doctor of Philosophy in 1929. Dr. Heflebower taught at the University of Idaho and the Pacific Northwest Banking School, and from 1929-43 he served successively as assistant professor, associate professor, professor, Economics Department head, director and dean at the School of Business Administration, State College of Washington. In 1939 he was president of the Pacific Coast Economic Association. During World War II, Dr. Heflebower was associated with the Office of Price Administration, serving as acting director of the Food Division and as economic adviser to the deputy administrator for price. From 1946-49 he was a member of the Senior Staff of the Brookings Institution, Washington, D. C. Since 1949 he has been Professor and is now Chairman of the Department of Economics at Northwestern University, and is an associate editor of the Journal of Industrial Economics.

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DR. KRESS: Admiral Hague, General Greeley, and gentlemen: We continue our economic discussions today on the law of supply and demand, touching on prices, and with a little to say on wages. I know you are all interested in prices; everyone is. So I am sure our speaker will have a sympathetic audience.

Our speaker this morning was just born to speak. The first time I ever saw Dr. Heflebower was in OPA during World War II days. There were half a dozen VIP's walking around and Dr. Heflebower was very carefully explaining to them. It wasn't very long before everyone wanted to know, "Who is that fellow?" He was such a good explainer and made such an impression that it was only a very few weeks before he was occupying a high position as economic adviser in the office of the Administrator.

He has helped us in many ways. He helped us way back in the days when we were over in the Pentagon at one of the class seminars. That was about the Class of 1946. Some of our speakers have been here twice and some three times, but our speaker today has been here half a dozen times. And every time we have given him an assignment that had no relation to his previous one. And every time he does the job better than he did the time before.

It is a real pleasure to present to you Dr. Richard B. Heflebower, of Northwestern University.

DR. HEFLEBOWER: Admiral Hague, General Greeley, and gentlemen: I think it would have been better had I not done so well on previous occasions, in the judgment of the administrators of this school. Then they would not have asked me to tell you in one hour all about supply and demand, which is, after all, about all there is to economics. When I told some of my colleagues I was going to give a one-hour lecture on supply and demand, they thought I was being humorous. But the more I thought about it, the more I realized that it forces us to get down to the essence of the problem. There is something to be said about being forced to be brief since that does not clutter up the essence of the problem with many details.

As we go through this hasty coverage of supply and demand, you will find that we move from one major topic to another major topic. So I want to list these at the beginning.

First, I shall talk about supply and demand as having to do with the "economic problem." That problem is completely independent of

our form of society and exists under capitalism, socialism, communism, or what not, as I will explain in a moment.

Second, we shall consider the role of supply and demand in organizing economic affairs, which is particularly important in our form of society.

Third, and the one that you perhaps have most interest in, is the subject of the supply and demand for particular commodities. We will find that these forces have to be examined under various circumstances, and that is where the analysis becomes complicated. It is also true that when we think of the functioning of supply and demand with respect to particular commodities, we must simultaneously have in our minds the way in which supply and demand serve to organize economic affairs in a society such as ours.

Finally, from time to time I shall make some references to the relation of what we are considering to the problems of economic mobilization in the event of a war.

Our discussion will proceed better if you do not attempt to follow with your eyes the outline which I have had reproduced for you and which has been handed to you. When I make reference to one of the charts which accompanies the outline, I will refer to it by number.

We start, then, with supply and demand as involving the essence of "the economic problem." On the one hand, we think of human wants, which stem from our biological and environmental background. There are two characteristics of these wants which are essential for our problem.

The first is that we have a decreasing desire for more of a particular good, typically. Sometimes I wonder whether that rule applies to alcoholic beverages, but, we say in economics, we simply move the demand curve over in such a case.

The second aspect of demand is that, although our desire for a particular commodity may become satiated, we seem to have an unlimited want for goods and services in general. There has never been enough to go around.

On the other hand from demand is what we can supply, which stems from the availability of our human and material resources, our skill in organizing them, and the technology with which we put them to use.

Economics starts, then, with the fact that we have a scarcity of resources and productive capacity to produce all the things we want, on the one hand; and the character of our wants, on the other hand.

Therefore, the essential problem of economics is, How do we decide which commodities we want to produce, and by whom? That is the basic character of the economic problem; it is the old scarcity problem, which you have heard referred to in connection with economics.

The fact that we have to get produced what is wanted gives rise to the problem of how we shall organize to get this production done. We often think of organizing--and I think particularly you men in the military do--as involving an organizer. But that is not necessarily true. In fact, the essential characteristic of the Anglo-Saxon society is that organizing is done without there being an organizer; that a large part of our organizing is done by give and take among individuals. This is epitomized in the economic area by the market process, but our noneconomic relations with one another are of this sort, too. We learn to live and work together. Nobody orders us around from on high. This is the character of the multitudinous relations within the family, between families, among parts of the country, and so on.

So, then, we have the problem of organizing the use of our resources to produce what is wanted.

What do we mean by "what is wanted"? The economists' ideal is that of consumer sovereignty; that is, that everything gets its motivation by what people as individuals want. The consumer is sovereign. Economists' in our country at least, are consumer-minded in that sense; they hold that the ultimate objective of all economic processes is to produce what consumers want. We want something, and we buy it and pay for it. While limits are imposed on a few commodities such as harmful drugs that affects a minor part of the total.

Most of these decisions by consumers are reflected by dollar votes or the way they buy goods. They make their choices between products according to their relative intensity of want for goods.

Following out these basic ideas, we find that there is a limit on how much people will buy of a particular good because of diminishing satisfaction from increasing quantities of that good, relative to the satisfaction obtainable from other goods.

Some wants are expressed by the political process. We may want to have a certain share of the national income spent for national defense or for developing resources through the governmental process. This kind of voting process does not have the same characteristics as the voting by individuals with their dollars, but it does sometimes affect the demand for certain goods.

The first thing we want to bear in mind therefore is that the demand for a particular commodity reflects the fact that, as more of it

is consumed or processed, the desire for it is less intense. Out of that comes the falling demand curve, which is indicated on figure I or the first of those that were handed out to you.

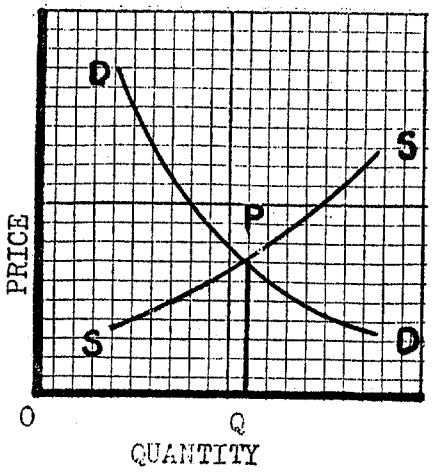

Figure I

These demand curves may have, as we say, differing degrees of elasticity. Salt and gasoline are examples of commodities that seem to have a highly inelastic demand. They are an essential part of our everyday living. There are no close substitutes. You would pay a dollar a pound for salt, if you had to, to salt your food. My guess is that you would be willing to pay a considerably higher price for gasoline without cutting your consumption very much.

On the other hand there are some commodities, which are not essential parts of our everyday living, or for which there is a close substitute, where a small change in price would bring about a substantial change in the consumption rate.

As this topic is pursued further, the relationships become very intricate because they involve the intricate matter of how people use their incomes and why they do as they do. We need not go further for present purposes.

In contrast to the fact that the demand curve falls in the sense that people will pay less for larger quantities, the supply curve typically rises. The general idea is that to get more of commodity A, sources have to be attracted from producing B, C, D, and E. Consequently, there is a resistance to the supplying more to commodity A, and this is represented on figure I by the rising supply curve SS.

The supply curves for different commodities vary widely in elasticity. For a given commodity the elasticity is different--usually less--for a very short period than for an intermediate period, and even less

compared to the elasticity for a longer period. We will talk about these situations in a moment.

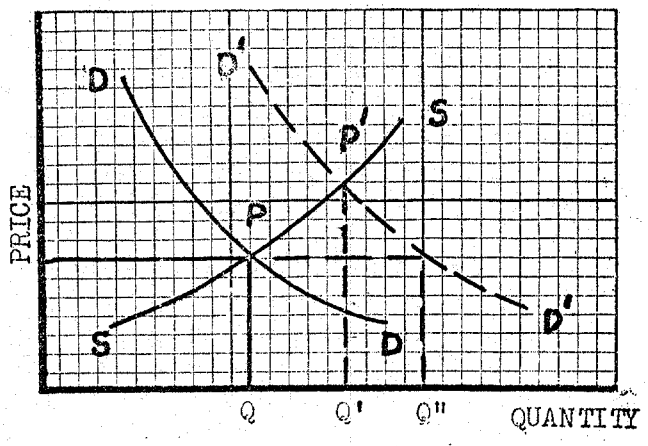

Figure II

We can see a good deal of how the economic processes of the market work if we examine what happens when a change in supply or demand is introduced. Here this will be illustrated by an increase or decrease in the demand for a commodity. By that we do not mean that people will buy more or less as the price falls or rises. Instead we mean that they will buy more at the same price or more at a higher price in the case of increased demand. That is represented in figure II by the movement of the whole schedule to the right, that is from DD to D'D'. This new demand curve, D'D' says, that people are now willing to buy a much larger quantity at the previous price P than they were before.

But there is also a supply problem represented by the slope of the curve SS. Suppliers are not willing to offer at price P as much as buyers would take. We would move, therefore, to a new equilibrium at P', the point at which the increased quantity which people are willing to buy at that price will be supplied.

This is a very elementary chart, one which you have all seen before. It illustrates two points. One is the tendency in a market economy for adjustments to occur without their being ordered from on high. Second, there tends to be established a new equilibrium, a new balance of forces, at quantity OQ' and price P'.

Another aspect of what this analysis shows--and we still are talking really about the organizing problem--is that there is always a rationing problem to be faced. So long as a commodity is not free, in the sense that there is enough to satisfy everyone's wants--such as the air outdoors--use of the commodity has to be rationed. So long as an article is scarce, there has to be some way of dividing up the available supply.

Price is a rationing device. It is the usual rationing device. It is an accepted rationing device. But this rationing device divides goods on one basis only, that is, according to people's relative intensity of desire and ability to pay for them.

As a result, it is entirely possible that some people who do not get a great deal of satisfaction out of a given commodity may purchase considerable amounts of it because they have ample income with which to buy it. On the other hand people who are buying very little of it may get a great deal of satisfaction out of the little they buy. The reason they buy only a small quantity is because their incomes are low.

Some people object to rationing by price and other bases could be used. I was just talking with a man who spent a few months in Israel. In that country the prime minister gets a smaller salary than a bus driver makes, because the prime minister has no children and the bus driver has four. Instead of the income being divided by some market process, it is divided according to need. Many people here might favor that principle, particularly those with large families.

It has often been thought that formal rationing, such as we had during the war is a better device. We used it as a process of morale building during a war. We divided certain scarce goods evenly--that is, one unit per person--regardless of the intensity of his desire or the size of his income.

On the other side of this supply and demand problem, we have to ration or allocate scarce resources. If we do not have enough labor--we will forget for the moment about the problems that arise in a depression--and not enough materials, or if we do not have enough capital or land, to produce everything we want, we have to decide for what purposes these scarce resources are to be used.

Again, price serves typically as the allocating device. The amounts that consumers pay for various goods determines the amount the businesses producing these goods can pay for labor, or for land or for capital to produce them. Relative demand for A, B, C, D, or E determines whether the resources will be used to produce A, B, C, D, or E.

Price as an allocating device divides the available resources among alternative uses according to the relative intensity of demand for various goods which might be used for producing them. And if this intensity of demand changes, say that commodity A is wanted more, relatively, the pricing process will shift resources into the production of more of A.

Again, we might use other devices for allocation. Actually you are all familiar with those, because that is what we do during a period

of a mobilization. We decide then, typically, that we do not want resources allocated by the price mechanism, at least in certain areas. Instead, we will allocate them by authority.

The points we have been considering can be seen more clearly by reference again to figure II. When demand rises from DD to D'D'--the kind of happening that is likely under price control--additional resources are going to be attracted into the industry, so that quantity OQ" will be produced. In the absence of higher prices, the additional resources will have to be directed to the industry by authority. To some degree, by the allocation of materials we also allocate the labor supply.

Again I want to warn you that this analysis will be qualified at a later time.

To return now to the general theme, when supply and demand are given free play--that is, there is no effective interference on the part of the Government or organized groups--there tends to be established an optimum use of resources. By that we mean allocating our resources to products and to business units so that that which is wanted will be produced most efficiently. On the one hand if there is no real control over supply or demand by authority or group activity, consumer sovereignty has free play. Consumers will purchase the things they want at the prices that attract them. By this means they guide the economic processes.

If those engaged in production do not produce what is wanted, they will be faced by financial failure. Others who are producing what is wanted, of the wanted quality, and by efficient productive processes will take more and more of the market. Those who are not performing satisfactorily will be driven out. Consequently, prices will be forced to the level of the lowest average cost, and that constitutes the most efficient use of resources. It is important to understand this fundamental characteristic of the competitive private enterprise system; firms have to produce what is wanted and do so efficiently if they are to stay in business.

Now we change our direction from the discussion of the organizing the functions of the market through supply and demand to talking about supply and demand and prices for particular commodities.

How supply and demand will work out in a particular situation will depend largely on the elasticity of demand, or the amounts that are bought at various prices, and the elasticity of supply.

It is important to realize that the short-term and the longer-term elasticity of demand may vary significantly. This is a point which is

often underemphasized in economic literature. When the price of a commodity first changes, the consumers may not quickly change their consumption habits. Or those who could produce substitutes may not quickly change their output of substitutes which might be made available to consumers.

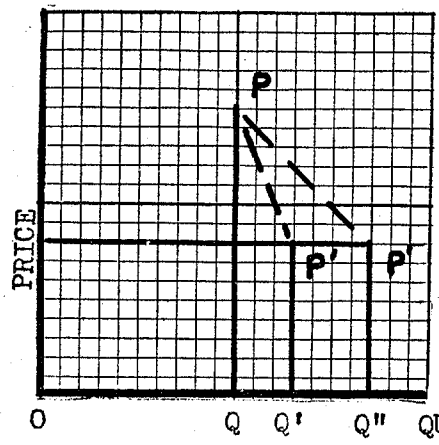

Figure III

It is entirely possible that, as shown in figure III, when the price first drops to P', consumers may consume only quantity OQ'. It may be many days before people see that the price has dropped. Consumers are not very active searchers for lower prices, unfortunately. But, as the word spreads, or, as is often the case, where a substitute can be used, it is entirely possible that consumption will rise to quantity OQ", rather than quantity OQ'. In other words the elasticity of demand will be greater after the passage of time.

It is also possible that the reverse will be true. I will not spend any time illustrating that. I just merely want to indicate that elasticity of demand, that is, the response of consumers to price changes, may differ after a period of time from what it is immediately after a price change.

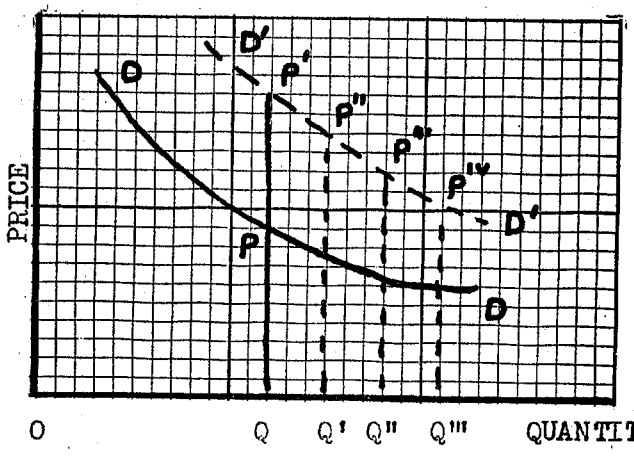

Figure IV

The elasticity of supply is much more complicated. If you will refer to figure IV, you will note that I have illustrated a number of different circumstances there.

If demand were to increase sharply, it is entirely possible that no increase in available quantity will occur at once. Parenthetically, I would remark that rarely does demand change in short periods by such large amounts, as is indicated on the chart, but we can always drive the point home better by overemphasizing the sharpness and the degree of a price change. The reasons for no increase in quantity could be varied. The product may be a nonreproducible good, a master's painting for example. Or it may be a commodity which is produced as an annual crop, as in agriculture; and it is not possible to produce more of it for months. Or it may be a nonstorable commodity and require quick consumption. Only so many strawberries are available for a season. Nothing can be done to get more until next year's crop comes along. Therefore, when the demand rises, the price might rise vertically, right up to where the new demand curve is hit.

But in most commodities there is some flexibility in the quantity that can be made available. If it is a storable agricultural commodity, like wheat, owners of wheat may draw down the carry-over. In most instances where people are engaged in continuous competitive productive processes, they can produce more. More shifts can be put to work and more people employed on shifts. Marginal facilities can be brought into use and produce more of the commodity. Even cows can be fed better and more milk obtained rather quickly. If hens are fed better they will lay more eggs. There are many ways in which output can be increased and business has shown great ingenuity in doing so.

So the quantity may quickly increase from Q to Q' in some commodity fields, but in others it would take a somewhat longer period for additional resources to be drawn into use. In the case of agriculture a new crop cannot be planted until next year. It takes still a longer time to get more land into production. In the case of manufacturing, it may be possible to install more machinery in the same plant. But if a whole new plant has to be built and equipped, it may take from two to five years to get it into operation. It might be a very long period before output would rise to OQ".

Then, of course, we have those cases where the change in the level of demand is so great that it changes the conception of the production process. I think you men probably realize that more than anyone else, because the growth of military demand is sometimes very sharp. During the war we moved from making only a few planes or tanks into the production of thousands of each. So we began using the automobile industry's techniques.

Referring again to figure IV, it may be possible to produce quantity OQ''' by introducing a different productive process. I will talk in a moment also about the price that can be expected in such a case.

Thus far I have talked solely about demand by itself and then about supply by itself. Now I want to put them together.

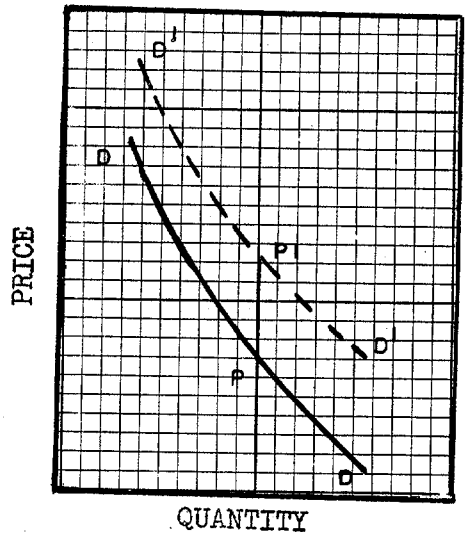

Figure V

First, let us take the case of a commodity for which there is no elasticity of supply in the short period. In other words in the period for which this analysis is made, it is not possible to change the quantity produced. So if demand rises from DD to D'D' in figure V, a corresponding increase in price must occur.

What I want to illustrate next is a case which is very typical of agriculture. For most farm products the supply is highly inelastic, even over a considerable period--not just over a short period--and the demand is also inelastic. Consequently, whenever there is either an increase of supply or decrease of demand, prices change sharply.

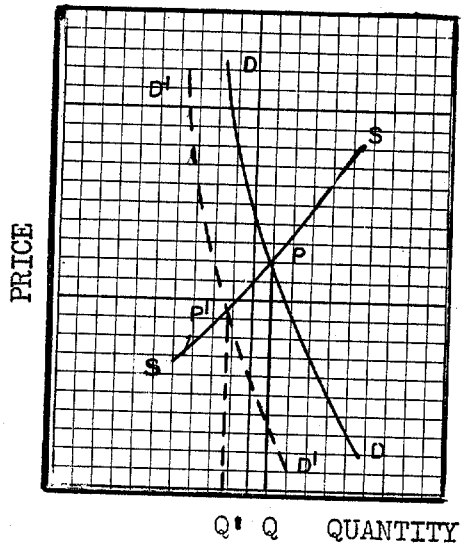

Figure VI

This illustrates the situation that the growers of some agricultural commodities faced last year. The Korean crisis had brought about an extraordinary demand for agricultural commodities, but this began to be reversed over a year ago. This is illustrated in figure VI where a movement of the demand curve back from DD to D'D'. Note that the decrease in demand is not very great, but that the drop in price is sharp to the new equilibrium at P'. The amount of acreage tends to remain very much the same. It is only the price that goes down. So that a relatively small decrease in demand, when there is inelastic demand and inelastic supply, brings about a drastic drop in price.

When an increase in demand occurs such as came in 1941 to 1945--and it occurred again after the Korean incident--there is no easy way in a short period to increase the agricultural output in toto, because total acreage, numbers of fruit trees, or size of breeding herds cannot be increased quickly, so a small increase in demand will bring about a very large increase in price.

A very interesting parallel has developed in crude oil, where there would be an almost perfectly inelastic supply situation in the short run; if there were no government control programs which held output below what the existing mills could produce. In the short run also the demand for petroleum products, at least for all petroleum products except residual fuel oil, is highly inelastic. So any variation in demand would bring about a very substantial change in price. Or, if we want to reverse the process, a sizable change in price would not bring about much change in output.

These are cases in which you may think that price is not a good governing device, as wide savings of price are required to bring about small changes in the amount sold and bought. Certainly, the producers of farm products and oil do not take sharp price declines but do like the increases. Remember now that we are talking about price as a governing process. Nevertheless prices do adjust if let alone so as to distribute the available supply among those who want it. It also governs the output, and provides a balance between output and amount consumed.

Now our attention turns to another area where I expect that you have done more reading. Here we will examine what happens in the typical manufacturing industry when there is a change in supply or demand.

You will notice that in figure VII the supply curve is quite different from those which I have been using thus far. I call your attention particularly to the horizontal segment of the supply curve. It represents the idea that if demand changes even over a substantial range, there will be a directly corresponding change in the amount of the commodity made available by the manufacturers. That sellers will react this way requires

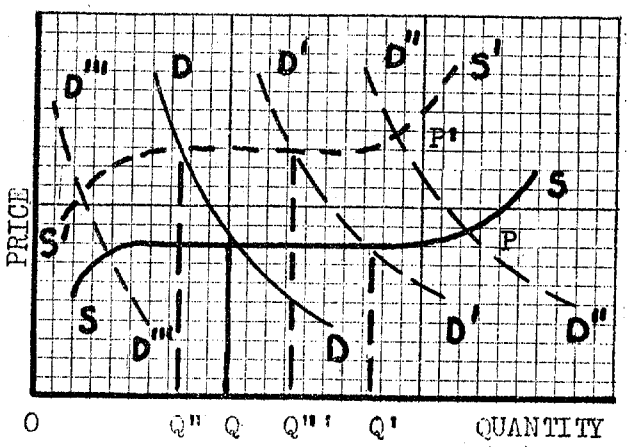

Figure VII

explanation. Each producer has his own consumers to some degree and his own distribution. He produces what his distribution channels can sell and what consumers who prefer his product will buy. Consequently he varies his operating rate within a substantial range as demand moves up or down, but does not alter his prices. That is the characteristic situation in much of manufacturing.

Now, of course, if the demand moves sharply on over to the right, say to D"D", that may be beyond the level at which sellers can produce easily with their regularly used facilities. They are then forced to put idle, low-productivity units--standby units of various sorts into use. They may run the plant when they have to pay overtime. They may have to hire less efficient workers. All such resources point to rising costs and sellers may demand higher prices as is shown in the righthand segment of the SS curve.

Whether or not sellers will actually raise their prices in such circumstances is a matter of debate, and I do not believe we know enough at the present time to make a generalization about what will happen.

We might think that 1947 and 1948 were tests of what manufacturers would do when they could sell more than they could produce. At that time most manufacturers held down their prices. They did that in part, I think, because a policy had been in less active periods not to change prices merely because demand increased. Just after the war management feared that if they did not hold down their selling prices, they would be faced with still higher wage demands. Finally the Government urged them not to raise prices.

The fact that they held their prices below what consumers would pay for the available quantity created a rationing problem. But manufacturers themselves took on this task by choosing customers, by delaying deliveries, and so on. You see, the underlying necessity of dividing up the available goods is never removed, but the device by which the rationing is carried on can be changed.

Actually the conditions under which demand would rise to such a high level as D"D" would also be those in which there would be some scrambling for raw materials and for labor. Therefore it is entirely possible that the whole supply curve would be moved upward. This would illustrate the fact that when the level of direct costs rises, their sellers insist on higher prices for the same quantities.

It is likely therefore that when demand conditions represented by D"D" exist, it is very likely that simultaneously supply curve S'S' is applicable, and not SS. Therefore, instead of prices being at the low level P, they would be at the higher level P'.

On the other hand when business is bad, what do they do? It depends on how much demand falls and how badly some sellers need money. In other words what happens depends on whether there is somebody who is noncooperative, as they refer to it in industry, someone who is willing to reduce his price so as to obtain a larger share of the smaller market. In that event, you see, the supply curve may dip down when such a low level of demand as D"'D"' occurs. There may be price-cutting by some sellers and the prices of all sellers may move down.

Of course if demand were to decline to the low level of D"'D"', it is likely that simultaneously some of the direct costs of industry would fall--if not wages, at least some raw material prices. Consequently, not all of the impact of the decline of demand would be shown in the form of reduced income to the manufacturers, because some of it would be offset by the reduction in direct costs.

The next part of our discussion will be more complicated and there will be more qualifying phrases. The area conditions in industrial markets are more varied than in those we have been discussing and the economic literature is much less definitive as to what can be expected in the event of a movement of demand.

So far, when I have talked about supply, I have not referred to costs. Undoubtedly cost has something to do with the willingness of sellers to sell goods at varying prices, but that relationship is by no means simple. When I have a perishable product on my hands, my cost of production has nothing to do with the price I will be willing to take. When I am producing goods to order, and all my assets are liquid except those involving machinery, I am certainly going to be interested in what it would cost me to produce those goods before I will agree to do so at any particular price.

Now I want to talk about a situation in which the influence of cost on what a seller is willing to produce at a particular price is the key consideration. If you will refer to figure VIII you will note curve

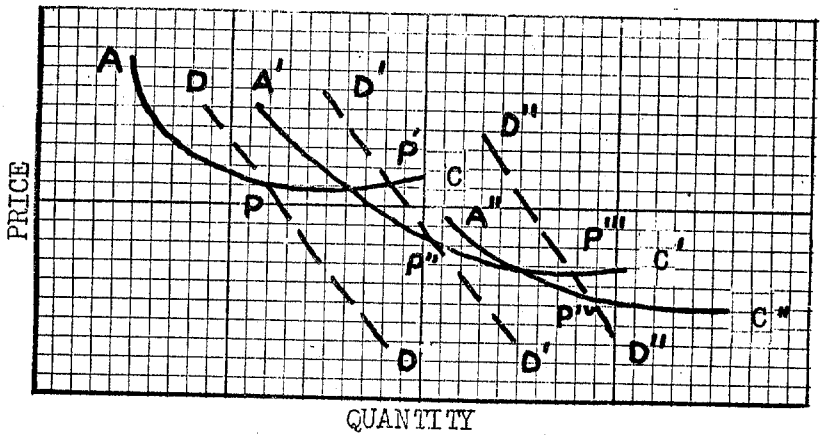

Figure VIII

AC which represents the total cost per unit of producing various quantities of a particular commodity by a firm. If at first the demand was at DD, presumably the price would come to rest at P. If the demand were to increase from DD to D'D', and if to meet it production would not have to be increased beyond the capacity of existing facilities, the price will have to rise somewhat. In order to produce the quantity to meet the demand D'D', some operating inefficiencies would arise. This stress and strain on the productive facilities by using them beyond the most efficient point is indicated by the upturn in the cost curve AE. Consequently, if the manufacturer is to cover his cost and get a normal profit, he would insist on a price as P'.

In the event the manufacturer was to conclude that this increased demand would last for a considerable time, he would undertake to expand his facilities. In this kind of industry he does not expand his facilities ordinarily by adding more of the same type of equipment. Typically in the manufacturing industries, particularly those that make what are called "hard goods," an increase in the amount that the manufacturer can sell coincides usually with technological advances which give him a new vision as to how he can produce, so that he will want to expand his capacity with new methods and equipment. Therefore his cost curve will be A'C'.

This curve represents the idea that at the sharply increased quantity which the manufacturer now things it feasible to produce he can produce at a lower cost. After a time it is possible, and probable, that the price will drop from P' to P''. We might go on and say that demand would expand to D''D'', and the process would be repeated.

This is what has happened historically in growing industries where technology is advancing and where demand is expanding. A great deal

of this would happen in the absence of an increase in demand, but it certainly is expedited and made much more clear by the expansion of demand.

Situations of this sort are of particular interest to you men in the military, because to a very marked degree the process illustrated in figure VIII is what you observe when military equipment production moves from the small-scale, experimental stage into what you call mass production. In such cases you have some difficult problems with respect to the prices to which you ought to agree.

Suppose, for instance, that current cost for the quantity you have been buying you have had to pay price P. If you then negotiate with an industry for a much larger volume, should you talk in terms of price P or price P' or P''?

If you conclude that the volume that you are going to order would affect methods of production sufficiently to move the cost curve back to A'C', then it seems to me that there is much to be said for talking in terms of price P'' and making it very clear to the industry that they had better get ready to produce at price P''.

Thus far I have been talking about the price for a particular commodity, and in doing so, have made the tacit assumption that the market is competitive. By competitive, I mean that the article produced is a standard item, and that there is no effective collusion among the sellers of the product. In such circumstances each seller is trying to best the others in ways that will in the end work out so that the price is determined by the costs necessary to produce the item and by what consumers are willing to pay for it.

Sometimes we have cases of real monopoly. These monopolies have occupied a big space in economic literature. I have illustrated this in extreme form in figure IX, because sometimes, we can see the point more clearly if it is presented in extreme form. So I have taken a commodity which itself has an inelastic demand, and I have imagined a monopoly such as has been exercised in various countries over salt or matches or cigarettes. In that case the demand for the commodity is highly inelastic, because it is a necessity for which there is no close substitute.

In this event, as is illustrated in figure IX, the most profitable price is a very high one such as price P'. The total profit is shown by the area marked off by broken lines and presumably the total profit would be less at either a higher or a lower price. We have no reason to assume that a price other than the most profitable one would be charged by a monopoly in these circumstances.

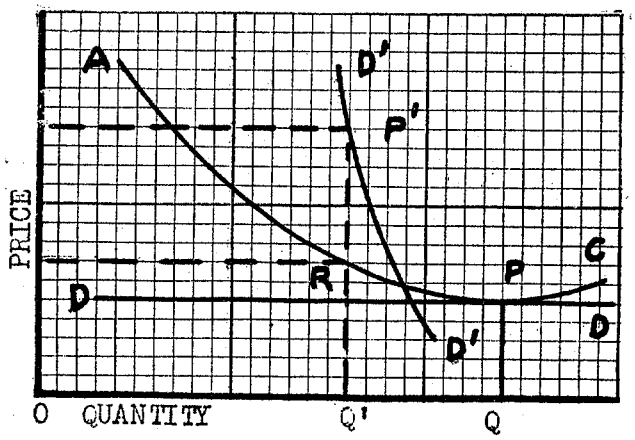

Figure IX

Now, after having illustrated how a true monopoly would work--charge the price which would give the highest profit to the monopoly, produce less than what the consumers would be willing to take at prices necessary to cover the cost--I want to emphasize that that kind of monopoly is not a very important problem in the American economy.

Even where people have patents on products very rarely can they sit back and enjoy the quiet life of an ideal monopoly, because, of course, the fact that they are trying to exploit their monopoly is going to stimulate others to try to get around the patent. Or, if it is a patented process, the patents provide a stimulus to everybody to try to develop a satisfactory substitute method. There are very few easy lives for monopolists, even when they have patents, and except in a few cases, patents are not an important source of monopoly power in our economy.

What we usually refer to in our society as the monopoly problem is not that where there is a "mono" or single seller, but that where there is a handful of large sellers. In manufacturing, for example, there are many concentrated industries. With reference to such industries the idea developed in the economic literature is that each seller is so aware of his rivals' reactions that he is very hesitant about engaging in vigorous competition. This is most clearly true about the attitude toward overt price reductions.

I think it is fairly obvious that, except in a period of real shortage, if one producer of gasoline, of a type of steel, of copper, or of similar standardized goods, cuts his price and the others do not cut their prices, the latter would lose such a large share of the market that they had better reduce their prices rather quickly. On the other hand if one seller of these products raises his price and the others do not, he will lose such a large share of his market that he will soon be forced to go back to his preceding level of price.

How important is this process in the performance of the manufacturing sector of the economy? In order to expound this particular point satisfactorily, I would need two hours. Since we only have 15 minutes for this and some other topics, I will comment only on one or two aspects of the problem.

The major point is whether one of this handful of firms considers the demand for his product to be fairly elastic or highly elastic. That is, if he were to raise his price relative to that of others would his rivals follow suit, and if not, would a large portion of his customers leave him. In the short run, his customers might not shift to lower-priced suppliers by large. Business does not think primarily in terms of today's market. Managements are thinking primarily in terms of the next 10 years. They know full well that if they hold high, relative to cost, that price they are charging, it then becomes attractive to potential competitors and some will enter the business. In our society, and with our antitrust laws, it is extremely difficult to keep others from entering most lines of business.

I realize that no man or group of men can very easily threaten a large petroleum company or a large steel company or a large copper company. It is obvious that you and I could not start a small company and threaten a large company. That is not the way the threat occurs in our society. The threat occurs by other large established businesses, who see a green pasture in some other line of business in the same stage of business, say manufacturing. Even that isn't the most important threat to monopoly profits; the more frequent successful entrant is some well-established business in some earlier or later vertical step.

Professor Wilcox, of Swarthmore College, one of our leading students of this aspect of economics has said that his definition of competition is 20 parts of concentrated manufacturing and one part of Sears Roebuck. In other words such large retail organizations stand ready to become manufacturers if the situation is attractive. They, in fact, have entered manufacturing time and time again.

Entries into industries which require millions of dollars of capital do not come from new small ventures. Rather, we should think of companies who have tens or hundreds of millions of dollars of capital who are looking for new opportunities to make effective use of those funds. Or entry comes from businesses who have a direct interest in getting their own raw materials more cheaply or to have their product distributors operate more effectively.

With respect to how markets for industrial goods will perform, particularly when sellers are few and large, the economic literature is not definitive. I think I am correct in saying however that there is a growing feeling that some degree of deviation from overt price

competition is a necessary condition to the assumption of the risks that are involved in heavy, fixed capital investments. And heavy, fixed capital investments are necessary to get a lowest cost and progress in process and product.

But, on the other hand, this advantage wears out rather rapidly; One reason it does so is that with the passage of time consumers become wiser about product values: In addition other businesses "engineer around" new processes or products. Finally the movement of other large companies with adequate capital into areas where the pastures are greener takes the lush of unusually high gains out of that line of business. So that today there is a great deal of what has been termed in concentrated industries "workable competition". There are, I must emphasize, economists who would disagree with that observation.

From time to time you will see labor unions referred to as monopolies. This is a point on which economists are divided. Indeed I think it would be correct to say that economists have not thought through the impact of the general unionization of labor on the competitive market system. These are parallels, but also differences, between "concentrated labor" and "concentrated industry."

Now I am ready for my first point, and that is, What about the supply of labor in general? In spite of this unsatisfactory state of our knowledge of labor markets, we shall attempt a systematic discussion which will start with the supply. Is there an upward sloping supply curve for labor as there is for commodities? If wages rise, will there actually be more workers available? I suggest that there is a point beyond which higher wages may actually reduce the hours of labor available, especially in the short run. People may not expand their consumption as rapidly as they expand their labor. Fewer members of the family may desire to work. Men could retire earlier. Young people may go to school longer as incomes rise. So it is entirely possible that paying higher wages would get fewer hours of work. This question is clearly relevant to the mobilization problem.

You may say: "There must be, of course, a wage level worked out." Certainly, wages are a price. They are influenced in general, as are commodities, by demand. When there is a rise of income, there is an increase in demand for the products of labor, and through that, an increase in the demand for labor.

Relative wages do serve to allocate labor among various industries to some degree. Wages are not the only factor in choice of jobs for working conditions may be far more important. The regularity of employment, the conditions under which people work, the way people are treated, may be important in determining where people work; and they may be as important as the wages that are paid.

Furthermore, wages do show a responsiveness to the movement of the demand for labor. I think there is no question but what the major movements of wages since 1939 have reflected the demand for labor and not the power of the unions. The power of the unions may have speeded up the movement of wages in some cases, but have clearly slowed down wage movements in other cases. The major factor has been the tremendous demand for labor, and there are only so many people who could or would work.

Simultaneously, relative wage rates have served to lead more people into employment A as opposed to employment B. But the process is slow, and just how it works we do not know. In other words we know much less about the employment and wages than we know about the commodity and price problems which we were discussing earlier.

It would be interesting to spend a very brief time on what industry itself does with respect to wages and in reaction to wage changes. Why does industry pay more wages? I think basically industries pay more wages because they need to pay more wages to hold the labor they have, to cut down labor turnover, or to attract in more labor. They may be influenced to a degree by unions, but the power of the demand for the commodity which is to be provided by the labor is enormous.

What does industry do, on the other hand, when it has increased its wage rates at a time when demand is not rising? If the demand for the product is very inelastic, and the wage increase is fairly uniform among all the competitors, then there will be an increase in prices of the product, because the level of direct costs will have gone up correspondingly for all suppliers.

If the demand for the product is quite elastic, and the price is increased, of course, the sales will fall off; and there will be some reduction in the level of employment in the industry, if nothing else happens.

In recent industrial experience it seems to me that paying higher wages has often expedited the process of reducing the amount of labor that is used to produce a given commodity. In other words industry is not always avidly seeking to carry out the lowest-cost methods of production. It often introduces costly labor-saving devices only under the pressure of rising costs. Certainly the recent phenomenal mechanization of many industrial processes which formerly involved the use of a great deal of common labor supports this view.

So far we have engaged almost entirely in what we call in economics a "partial analysis." Except in the first few minutes of our discussion of wages we have dealt with one commodity, or labor used in one industry. But it is important to realize that whenever anything happens to commodity A, that is not the end of the story, because this may set in motion influences that ramify throughout the whole economy.

If a consumer uses more of one commodity, he will presumably use less of some other commodity. The other commodity may be a close substitute and therefore those producing this substitute are affected. Or, when a consumer uses more of a given commodity, and it takes more of his income than before, he may, if his income is not increased, spend less on other completely unrelated commodities. Although furniture may not seem related to automobiles, it is really a rival of automobiles, not in the sense that people prefer to sit in automobiles to sitting in chairs; but because if they spend their money for an automobile, they may not have as much left over to buy furniture.

On the supply side, if more labor or steel is used to produce armament, less of these resources will be available for the production of a wide variety of goods. This is the essence of the supply side of the mobilization problem.

So we have a web of interrelationships running through our whole economy. You should think in terms of this web; that is, more of good A means more materials to produce good A, and therefore less to produce good B, unless the total supply of materials can be increased. So you should think of the economy as made up of, and bound together by, a series of market interconnections.

Therefore, if we have a change at one spot, whether it is by the market processes or by government action, a chain reaction is set up. It is important to realize that that is true. That is one of several reasons why an economist's answers are nearly always of the "yes, but" variety, because he recognizes the fact that there is no single, simple answer to a problem in economics. And I urge you to be suspicious of anybody who gives you a single, simple answer to an economic problem.

Finally, the way in which supply and demand works for a particular commodity, and the way in which supply and demand works in the economy as a whole, depends a great deal on how full use we are making of our available resources. If resources are quite fully in use, in order to produce more of A, we would have to produce less of B,C,D, and E. But if resources are not fully employed we would be able to obtain more of A by bringing into production A resources that would otherwise be idle.

Typically, except during a mobilization period, we have some idle labor and we have some idle raw materials producing facilities and we can draw those into use. But if increase of aggregate demand is pressed far, we do reach a point at which obtaining more of A can be done only by having less of something else.

Some of the effects of the degree of full employment are brought in the discussion of whether increased production for military purposes means that less goods will be available to civilians. In other words, how far can we have guns or butter? Or when do we face a choice between guns and butter?

This is fundamental for mobilization. It is important in mobilization to know how far we can get more of one commodity without having to face the problem of getting less of something else, because those who are engaged in the production or consumption of this something else are going to fight. You can draw workers out of unemployment into industry at times; but if you try to draw employees out of other industries, the other industries will fight back with wage increases, as we saw after 1941.

It is also true that we have to understand what we call elasticity of supply for a commodity in order to understand how easy it will be to get more of that commodity as we need it for war; and how far it is necessary to pay higher prices to get it, and how serious will be the problems of allocation and rationing if we insist on getting more of this commodity without raising its price. These are certainly problems for those who are organizing a mobilization program.

Quite opposite in character to what we have been discussing is a point that does not bear directly on your work, but is of importance to you as citizens. Our pricing system has a great deal of difficulty in adjusting capacity to produce products downward in most cases. It is far easier to increase output than to decrease it, because those in the business have fixed investments. In a period when demand is falling, they will not just throw away the funds they have sunk in a factory or a machine. So they try desperately over a period of years to recover that capital through operating the business. It is for this reason that downward adjustments in agriculture and in most of the manufacturing industries are quite slow.

This is particularly true if the decline of demand for the product occurs during a general business recession. There is then no alternative, or not enough alternatives, to which workers, capital, and resources can be shifted easily. Therefore our economy finds it very difficult to adapt to periods of unemployment.

I want to make one final point. There is widespread tendency to assume that if a government control is introduced, the forces of supply and demand have been suspended. Of course the conditions under which supply and demand operate will be different, and the power of these economics may be less, but I doubt if their influence is entirely suspended.

My study of markets and of public control has led me to believe that supply and demand by which I mean the decisions being made by consumers as individuals, and by investors and businesses as individuals, are enormously powerful. It is very difficult, even by use of the authority of the Government, to restrain for long the tendency of business to move where profits are better and of consumers to move to get what they want at prices that are satisfactory from their viewpoint. This makes the problem of economic control much more difficult.

I happen to like the fact that economic control in our society is very difficult, because it shows the underlying strength of these economic institutions which are part of our way of life.

Thank you very much.

COLONEL BARNES: Well, gentlemen, I am sure some of you have one or two questions.

QUESTION: I would like to talk with you about some of these figures--see figure VI. Supposing we take wheat as representative of agricultural items, where the curve SS, as you pointed out, would be quite inelastic, that is, supply would be quite inflexible as to changes in your initial demand curve D'D'. But just suppose that your demand curve moves to the left, to DD, as you have actually shown it in the right-hand figure. What then?

DR. HEFLEBOWER: We have the demand inelastic and the supply inelastic, and the demand moves back, like this?

QUESTION: That is correct. You have price P. Then suppose that the price of wheat is supported at the original price.

DR. HEFLEBOWER: That is a very good point. That is exactly what we are attempting to do right now.

QUESTION: What do you expect to happen then? What quantity?

DR. HEFLEBOWER: I would expect the quantity to be produced to continue to be the original quantity.

If the price is held at P, which is what you have specified in your question, you would hold consumption at OQ also, for that is the amount consumers will buy at P. And therefore we would have excess production equal to Q'Q. The Government buys this excess and dumps it in Europe or does something of that kind. That is the essence of the agricultural support program.

The next thing that could be taken would be to allocate the wheat acreage among the farmers. But the farmers could fertilize better and still produce the same amount, as they did to a large degree prior to the war. So nothing would have been solved.

QUESTION: Doctor, I want to turn back to labor unions for a moment. Will you comment on the effect that Communist-led labor unions have had on the Nation's economy?

DR. HEFLEBOWER: I have to preface this by saying that I am not a close student of labor economics.

I do not think there is objective evidence that really enables us to calculate the effect of Communist-led unions versus non-Communist-led.

I think we can say that a Communist-led union might be concerned not so much with getting more wages for its employees as with just disorganizing the functioning of the economy. Therefore it would interfere with the providing of that union's services in the economy, such as ocean transport or something of that sort. That is entirely possible.

That simply means that we would have a monopoly power over a labor supply exercised by groups that are not seeking the country's economic good. Therefore they are not concerned with the wages they can force the employers to pay the employees, or whether that would lead to a rise of prices for goods and services, but primarily with trying to disrupt the economy. That is quite a different kind of problem from what we have been discussing here. On the other hand there are some unions that are said to be non-Communist-led that are very susceptible to strikes.

QUESTION: It is possible for you to draw a diagram on the board to portray a market which is divided into recognized price levels, such as automobiles, and the effect of introducing a lower-quality and lower-priced car into the field?

DR. HEFLEBOWER: I could not do that with one graph, but I can come fairly close to it.

I will take first the effect on the price in the lower-priced field and on the supply situation in the lower-priced field. Suppose we have here a composite curve for Chevrolets, Fords, and Plymouths, at this low level. The demand for cars is not as inelastic as is the demand for some other things. If another low-priced car were introduced I would say that the effect would be to reduce the demand for this composite of Chevrolet, Ford, and Plymouth. In other words if there is another car coming in, something which we want in the low-priced car field, the composite demand for the others would be reduced.

QUESTION: In your discussion of figure VIII you made a comment to the effect that as quantity is increased the relevant cost curve would cease to be AC and become A'C' and eventually A''C'', and that the price would decrease automatically. Suppose as a procurement officer I am interested in securing the large quantity which would result in a price under P''', down to the base line, your comment was that we should be interested in getting industry to cut their price down to that level, whether they want to do it or not. Would you kindly tell me how that would be possible?

DR. HEFLEBOWER: This question might become quite complicated, because it involves the risks and uncertainty of capital investments on the part of industry.

I am going to imagine this situation in its simplest terms--that the contract which you are negotiating will provide in its terms for the amortization of all special equipment involved in the production of this commodity. We will get out of serious difficulty in that way.

You say to the industry therefore: "You are not facing the risk that we may keep you in production for only a year or so and then we will let you take a heavy loss on your capital because we no longer want this product. Instead we will amortize your investment special equipment during the period of the contract."

Now, your problem is to convince the industry that P''' is a feasible price. Isn't that the real problem?

QUESTION: Yes.

DR. HEFLEBOWER: You do not know precisely whether the relevant cost curve A'C' or A''C'' or an intermediate one. You do not know, but your impression is that it will be A''C''. The industry is going to do its best to convince you that you are wrong. The problem then becomes one for negotiation.

In certain instances, of course, you cannot force them to do what you think is feasible, so you are going to have to go on a cost-plus basis. I am assuming that the arrangement you want would really be to their interest. But industry doesn't always visualize that. They see such a large area of uncertainty. The thing to do is to set up a situation such that they can see both the low-cost and the minimization of their risks. If that is not possible, you may have to go to a cost-plus contract.

I have talked at length with one man who had the responsibility of purchasing some of the army equipment during the war, and he was convinced that you could set a low price and get contracts. I could give you a number of examples from ordinary business operations. One comes from a large retail organization of the thirties. The chief executive called in all his suppliers--they were assembling a small table radio--and said to them: "We are going to put out a table radio that will sell for 20 dollars. You sharpen your pencils and see if you can cut the price on the parts you supply." They came back later with a total of parts prices that was above 20 dollars, and no margin would have been left for assembling and retailing the radio. Then the business executive said to the parts suppliers, "You do not understand. I am talking about a million of these radios. Go back and really sharpen your pencils." The next time they came in with a total cost for parts that gave the retailer a substantial margin at 20 dollars. That is what I have in mind.

QUESTION: Wouldn't it be more natural for a responsible industry to supply the consumer market with its quantity price, rather than to

have you build this curve and assume that this is more correct than its price?

DR. HEFLEBOWER: As a citizen I would object to that, on the ground that I do not believe the supplier or seller figures it that carefully. I realize that we may be wrong, because we have much less information than they do.

During wartime, of course, we have the power of government authority. In peacetime we have no alternative but to submit proposals to industry. But I wouldn't want, as a citizen or a Congressman, to take any curve which might be supplied to me by industry.

QUESTION: Then this is not a tool that a procurement officer could use?

DR. HEFLEBOWER: No. I was just trying to illustrate what would be done. It is not a tool.

QUESTION: A good many of us now have a personal interest in housing costs. I wonder if you would discuss the workings of supply and demand in an industry like the construction industry. What will happen if there is a cutback in the construction industry generally?

DR. HEFLEBOWER: Again I have to plead that I am not an authority on the construction industry, but I will make a few comments.

The construction industry is a mixture, as you know, of everything from small building contractors to large engineering contractors. Only in some engineering contracts would the size of the project affect costs and bids in the way we have just been discussing.

In the case of home construction, there is in some areas an unfortunate collusion between the local governments and either unions or contractors in the construction industry, which amounts to a form of monopoly. Housing costs are made high by this as well as by the high level of demand and low efficiency in construction. Northwestern University is in Evanston, Illinois, a city which wins two annual prizes--one for having the highest construction costs in the United States and the other the highest rents in the United States; so I am very sensitive on this point.

Some economists are saying that when demand rises, these curves move down. This Lever development is moving down on that curve. I am sure that when the people built the Cooley Dam, in the state of Washington, they did it by a different method of building than is utilized by the construction industry generally. But, unfortunately,

I think a large part of the individuals in housing construction are still thinking in terms essentially of the methods that they had been using before.

My general experience with competition leads me to believe that modern developments are going to check these high costs. I am referring to devices like the improvements in concrete form production. They are now using any number of devices as house sidings. That field is progressing rapidly.

There is one other point. In any industry where entry of new skilled workers is as difficult as it is in the construction industry, partly because it takes so long to become trained, that industry is faced with high labor costs where demand has risen sharply. Part of these high labor costs are a reflection in marginal character and low efficiency of the labor brought in. They do not need to work very hard.

One of the major effects of a cutback in construction activities, would be I think, a sharp reduction in labor costs without union wage rates falling. I suspect also that some inflation of materials prices relative to necessary costs has occurred also. So we could expect that if construction volume fell, construction costs would come down, particularly in the engineer contract area.

ADMIRAL HAGUE: The Colonel's question about Communist-led labor unions concerns a matter in which I have had considerable experience, that is, labor relations dealing with unions. I might be helpful to you there.

There is a well-recognized and accepted technique in the most conservative unions, the AFL, CIO, and so forth, for recruitment. You cannot recruit members as long as things are going along smoothly. If you try to recruit more members then, you will probably lose more members than you gain. So, if you don't find yourself in a situation that will lend itself to recruitment, or to holding your own members, then you have to manufacture it.

You will run into people who will do the strangest things, totally inexplicable, built on nothing at all; and you will wonder why in the world they live. And yet those people may prove in times of stress to be staunch and wonderful pillars of support. The technique is simply this: They will pick out one link in management and raise trouble about it. Contrasting with that one link, they will praise some other part of management.

I just wanted to put that out to you for your information, so you can understand what is going on. Just because somebody stands up and raises h--- for no good reason doesn't mean he is a Communist. He is

probably just someone of that kind. As I say, in times of stress he may prove helpful. Tuck that away in your memory, because it may help you when you are dealing with labor unions.

COLONEL BARNES: Dr. Heflebower, when you get back and meet your colleagues, you tell them you did it in an hour. When they ask you how you did it, you say, by careful preparation, by a very useful handout, and by the personal talent and ability of the one and only Dick Heflebower. On behalf of all of us, thank you for a very enlightening and stimulating lecture and discussion.

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