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I am deeply grateful for the opportunity to speak before this gathering at the University of Cincinnati. It is a real pleasure to be again in such an intellectual atmosphere as this.

It was some years ago when I myself left such an atmosphere as a graduate of Princeton, but I continued with academic work as a teacher at a school in India. After that, I studied for a Master's degree and then a degree in law. But even after all that study, I think that I have never ceased to be a student. None of us can. There is never a time when we can cease to ponder and study and conclude-- and review and restudy.

Here, we are in a country where we can do so freely---where we can keep our inquiring minds active---freely exchange ideas---freely discuss our differing viewpoints. In the United States, we can intellectually and morally be thinkers. We can have freedom here---an advantage that is lacking under the dogmatic totalitarianism we call Communism. We are indeed fortunate to study in America--- a free Christian country.

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89-2

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If the second World War proved nothing else, it proved that  
a modern industrial plant is indispensable to victory in modern war.

The extraordinary productive capacity of our own industrial plant  
was revealed to most of us for the first time as a result of our  
victory  
in 1945.

The Marshall Plan was based upon the belief that Communism  
thrives in economically depressed areas. Our effort was to help  
prime the pump of prosperity in such areas through economic aid.  
Economic aid was, in turn based upon the same industrial capacity  
that had had so much to do with winning the war.

HS/HC-164

Steel production, likewise, has increased more than four times during the last ten years. Electric power output in the Soviet Union has had almost as spectacular an increase, from 43 billion kilowatt hours produced in 1945, to 170 billion in 1955. These are all basic resources for making war. Furthermore, the picture with respect to actual war goods being produced, and of material under development, is equally sobering. In combat aircraft, submarines, guided missiles, and nuclear weapons for air, land, and naval warfare, the Soviets are making progress.

This development of Soviet industry, from its position in the 1930's as among the world's backward economies to its present position as its second greatest, is something that we cannot pass off or ignore. It need not put us into a panic, but it is definitely worth examination.

HS/HC-164

Meanwhile, in spite of the peace that officially reigned in the world, war seemed at times so imminent as to be almost a fact. For three years--in Korea--it was a fact.

Consequently, our industrial capacity had to be put to work for war or near-war purposes as well as for peaceful diplomatic maneuvers. It may well be that our freedom from a more serious war than we fought in Korea has been a direct result of that industrial capacity which stood, and still stands, as a deterrent to would-be enemies.

Now we are faced by a new threat, founded in Soviet economic gains over the past ten years, which threaten to continue in such measure that they might equal or surpass our own.

Oil, steel, and electric power, as well as other critical commodities that are basic to Soviet war economy, have taken a tremendous leap forward the past 25 years. Crude oil production, for example, has increased 5-fold, from 126 million barrels in 1930 to 505 million in 1955.

HS/HC-164

Most of that increased rate of production has occurred during the last ten years since the end of World War II, and without the need for subverting the oil resources of the Middle East to their needs.

Steel production, likewise, has increased more than four times during the last ten years. Electric power output in the Soviet Union has had almost as spectacular an increase, from 43 billion kilowatt hours produced in 1945, to 170 billion in 1955. These are all basic resources for making war. Furthermore, the picture with respect to actual war goods being produced, and of material under development, is equally sobering. In combat aircraft, submarines, guided missiles, and nuclear weapons for air, land, and naval warfare, the Soviets are making strides that seriously threaten western supremacy in weapons.

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HS/HC-164

How did this development come about?

In the first place, it came about in a totalitarian state.

Just as Hitler, before World War II--and even Mussolini to a lesser degree--was able to make remarkable industrial strides in a few years because he could control all elements in the economy to predetermined ends, so Stalin and his successors have been able to do things that would be impossible in a democracy.

The essence of what these dictators have done lies in their ability to channel resources into heavy industry. Heavy industry provides the sinews of war. That was the first reason for encouraging it.

During the last ten years, while the people of the United States and other democracies have been travelling in automobiles, watching television, or taking the dog for a walk while the laundromat washed the clothes, the people of the Soviet Union have been toiling in factories that produced tanks, artillery, or aircraft--and doing their own wash. We can surmise that they didn't like this very well, but we know that there was nothing they could do about it.

HS/HC-164

This system produced industrial progress of a sort. We can see that too.

This, then, was the first reason why it has been possible for the Russians to arrive at a modern, highly productive economic system overnight. They could channel a high percentage of effort into basic industrial needs without fear of what the people would think about getting no personal reward for their work.

But this same advantage, shared by all totalitarian states, had further ramifications in the USSR.

They were little dependent on the outside world for the raw materials that must go into modern industry. They could get most of it from the vastnesses of the USSR; requisition much of it from their captive nations, and acquire the rest through devious channels. They were not forced to make concessions to anyone else in order to get raw materials.

HS/HC-164

They had no labor problems. What they call Unions are encouraged in the USSR, but the so-called union is permitted to do nothing to better the lot of the workers. No worker has the right to work where, when, or if he chooses. He will work, and it will be when and where the state chooses. Note, for example, the Soviet announcement a few weeks ago that 3,000,000 workers will be moved east--not because they want to go east but because that is where the Party thinks they are needed.

But neither raw materials nor a labor force alone, will provide a modern economy. There must also be trained minds, first to construct the necessary plants; next to plan what they will produce, and finally to run them.

The need here is for scientists, engineers, and industrial managers. These we have had in the United States as a matter of course ever since our Industrial Revolution began. But we did not have them because we deliberately planned it that way.

HS/HC-164



I If a fellow seemed to be pretty good at math, while regularly flunking Latin, and if he liked the sort of work that went into the construction of bridges, then he probably went, if he could afford it--to the University of Cincinnati, where he studied engineering. Or he might specialize in science either to become a teacher, or maybe to work for an industrial plant.

The opportunities in this field were attractive enough to lure a good many into it. It was a simple matter of supply and demand which took care of itself while our industrial plant produced what people would buy--or (when the war came) what it took to ensure victory.

But the Soviet state--long attuned to Five, and other, Year Plans--became convinced by our success in the war that it must develop an economy equal to ours at the earliest possible moment. The Soviets now have a new 5-Year Plan, one that was rubber stamped only two months ago by the widely advertised 20th Congress of the Communist Party at Moscow. Incidentally, we have all read and heard a lot about the purge of Stalinism that took place at that Party Congress,

HS/RC-164

and it should be said that there surely are elements in that purge in which the West can take some measure of hope. But there were fewer headlines about the Soviet's new 5-Year plan, which also occupied a good bit of attention of that Congress. And that new plan, far from being a rejection of Stalin's policies, was actually in the best Stalinist traditions, with its new higher goals for production.

While the Soviets hold out the hope to their people that there will also be more consumer goods during the next five years, the Communist Party has rejected again the idea of making a transition to a peacetime economy in which the people can share. Just a few days ago, for example, Pravda publicly scolded one of its leading economists, who apparently misinterpreted the anti-Stalin campaign by preaching the need and hope for an economy of abundance for the average man. This economist, Mr. L. D. Yaroshenko by name, is now being called one of the "rotten elements" of the Communist Party, because he assumed that the end of Stalin also meant the end of Stalin's economic policies.

HS/EC-164

So they began an intensive campaign of education and training designed to provide the scientists and engineers and plant managers. As a result, right now they are almost catching up with us in number of such trained specialists, and threaten to overcome our lead in not many years' time.

For example, as I reported a year ago, the Soviets might have 1,200,000 scientists by 1960, thus outnumbering American scientists at the present rate of our training.

We are still ahead in numbers and, more important, in the quality of our scientific training and the intellectual level of the men turned out in our schools and colleges. And we are not plagued by the fallacy of mixing science and politics. Genetics, for example, has been regarded in Russia as a "bourgeois justification of ancestor worship and class snobbery." While Lysenko and his environmental theories have recently been deposed, there is no evidence that real scientific freedom has suddenly appeared in the USSR.

HS/HC-164

On the other hand, the Soviet Union is attempting to imitate the West in some technological processes. Russian technical literature on industrial engineering is now calling for greater plant specialization, for automation, for better cost accounting, and for jinking obsolete machinery. And they know more about machine tools and how to build or import them than some observers had given them credit for.

Another requirement for a modern industrial plant--or an ancient one so far as that goes--is food. Here, the Soviets have not fared very well. Agriculture is their present chief weakness. There are many reasons for this. The over-eager attempt to over-collectivize the farmers is one. Overemphasis on heavy industry is another.

A more basic reason, however, is the paucity of good agricultural land in the Soviet Union. Considering how much land there is, this might seem strange, but the fact is that 90% of it is frozen or barren. The recent attempt in the USSR to extend land under cultivation into highly marginal areas is a proof of the Soviet agricultural plight.

But human beings can do such on a sparse diet so long as they can be made to work in spite of it. The Kremlin does not lack means of making people work while they starve.

The final, and indispensable requirement for a modern industrial plant is modern scientific and technical knowledge itself. It took us something like 150 years of patient research and development to arrive where we now are in this respect, during most of which time, Russia was a vast enigma full of illiterate people governed by an unprogressive Czar. But all that we and the rest of the Western world had learned through our century and a half of effort has always been available to any nation that could read. Thus, starting

more or less from scratch as of 1916, the USSR could build up the second most productive industrial plant in the world by 1956, basing their progress upon what other people had learned.

During the past year or so, we have come face to face with a new development in the clash between Communism and Democracy which is closely related to what I have been saying. The Russians, having prepared somewhat desperately for war ever since the last war ended, and having got little return for the effort other than our own counter-preparations, now seem determined to wage peace.

HS/HC-164

India. But the basis of the new attack is the same as that of the old--an industrial plant which will actually produce what Soviet diplomats offer.

This is the immediate effect that we are witnessing today of the rapid evolution of the USSR from industrial pigmy to an industrial giant. Not long since we watched the Soviets make extravagant offers to foreign governments that they could not possibly, and did not, fulfill. Now it is a different story. Their military equipment--like ours--becomes obsolescent. There are better uses for obsolescent military equipment than the scrap heap. What may have gone out of date and therefore useless to the Russians may be an instrument of great power in the hands of the Egyptians.

Similarly, if you can develop a surplus of farm machinery--or of technicians--you can use them to good advantage if you are able to place them in the right spots.

HS/HC-164

If you have been following the newspapers, and the magazines, and the Congressional Record, you know that what I have been telling you is by no means being discussed here for the first time. In fact, some quarters have exhibited a pessimism which amounts almost to gloom over the prospects left by Soviet industrial development.

I do not feel quite such pessimism myself. For this is an old story. When the war began, it was widely being said that the democracies could never compete with the dictatorships because of totalitarian discipline which permitted marshalling and deployment of all resources for war exactly where and when they should be according to plan. It was said that the dictators--unencumbered by the slow processes of democratic government--would either bring us to defeat or force us to adopt their methods.

Nothing of the sort happened. It was simply proved again that a free people, faced with danger, will defend themselves. It was also proved that there is no process of dictatorial planning that will outdo our own system of free enterprise.

HS/HC-164



But it was also proved again that eternal vigilance is the price of freedom. And this is the main test now. We must all be aware of what is happening behind the Iron Curtain. We must surely not sit back smug and content. Soviet progress and the threat of more progress are facts. As has always been our custom, we shall deal with them as facts and act accordingly.

For you of this great University, perhaps the fact of most immediate significance is Soviet progress in education. Normally, we should be glad to see education advance and improve in any country. It has always been our belief as Americans that education is a good thing, that in the end it brings and leads to understanding between people and between peoples.

In this particular case, however, it is evident that Soviet purposes in education are not necessarily peaceful. When it is possible--as it is in the USSR--to direct students into the paths desired by the state, regardless of what may be the wish of the student, then you can, if you wish, train your people for particular ends. The concentration in the USSR on scientific and technical education, along with the continued training of an enormous military force, is pretty good proof of what these ends are in that country.

HS/HC-164

We cannot, and shall not, I hope and pray, ever descend to the expedient of steering unwilling students into specializations desired by the government. Yet I fear that we must have engineers, scientists, and technicians in greater numbers over the coming years. By strengthening our colleges and universities for those purposes and by providing good opportunities in those fields for those who choose to enter them, I think we shall solve that problem.

America's greatest international strength remains its ability to maintain freedom and prosperity at home. Our strength includes many factors, and among them are the freedom of scientific inquiry, the freedom of occupational opportunity, the freedoms that make up our system of productive enterprise, and finally, the freedom to understand both our friends and those who would be our enemies.