PROBLEMS OF INDUSTRY CONVERTING TO WAR PRODUCTION

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COLONEL KLEFF: Within the past 19 months this country has been faced with a problem of converting or partially converting its industry to war production. It is essential, therefore, that in our study of production we investigate some of the difficulties that are involved in changing from peacetime to wartime production. These difficulties will be described in our lecture this morning on the subject, "Problems of Industry Converting to War Production."

Our speaker, Mr. J. W. Pocock, has had wide experience in the field of industrial management and at present is a partner in a firm of management consultants. He is therefore well qualified to discuss this subject with us. I might add that this is the fourth year that Mr. Pocock has favored us with a lecture.

It is a pleasure to welcome you back to the Industrial College of the Armed Forces and to present to this group Mr. J. W. Pocock.

MR. POCOCK: It is a please to be with you again this year to examine with you certain problem areas relating to the conversion of a so-called peacetime industry to production of military materiel. It seems that I am always talking to you about problems. The implication may be that problems are all we have. This is not true. There is much that is pure and good.

In speaking to you today, I am fully conscious of the dangers imposed by repeated appearances on this platform. Most serious is the fact that past utterances have a way of coming back and haunting me, particularly in this fast-moving period. For instance, I am haunted by a lecture given two years ago in which I undertook to discuss some of the basic problems and failures in our military industrial planning and ventured to suggest that these would show up rather promptly if we got forced into a heavy mobilization period. Then Korea hit two weeks later--before my remarks had a chance to sink into the safety of obscurity. In a strong atmosphere of self-defense, I hope you will permit me to relate some of today's comments dealing with current experience to certain points of earlier lectures.

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The Scope and Sense of Discussion

We have spoken before of four general categories of conversion problems:

1. Those companies whose product does not shift during an emergency period but whose conversion is simply increasing or cutting back volume. Much of this is product required to maintain a given level of civilian economy. Mining, transport, and food processing are, perhaps, good examples. These people have no physical conversion problem such as we mean to speak of today.

2. Companies whose specific product is shifted yet remains in the field of their knowledge and experience. Much of this is civilian-type product required for support of the military effort. Weavers and distillers are perhaps representative. Problems of physical conversion of plant now enter into the picture, but are not generally acute during this period of limited mobilization.

3. Companies whose military product requires a major conversion from production of existing materiel or companies whose expansion requirements are so tremendous as to put them on another plane of operation entirely. Mobilization changes are of major proportions and require major shifts in the modus operandi of the company. The automotive, aircraft, and shipbuilding industries are outstanding examples. It is in this category that we are most active in conversion today. Our discussion will concern itself primarily with these companies.

4. Organizations which are or will be expected to go into production of new and advanced materiel; this materiel because of technological advantage is required in quantity and at an early date. On much of this we have no direct experience upon which to base our production planning or our thinking. I am speaking of certain advanced fire-control systems, stabilized gun platforms, guided missiles, and so on.

We will speak of some of the problems of this fourth category although by and large the full impact of these problems will not be felt until some of our newer post-World War II technical developments reach the mass production stage.

My remarks today will be related primarily to the plant or production problems of converting industry and certain attendant administration matters. The problems and irritations we shall speak of are those having their source in the basic nature of the military-industrial relationship at the operating level. I shall try to draw my portraits with a strong coloring of post-Korea experience although the similarity of such post-Korea problems and those of World War II will be evident. The old dogs are still with us.

I will also limit my remarks on such well-advertised top problems as machine-tool holdups, unsettled requirements by the military and material allocations. These problems belong to a higher, policy-making level and though we get the full impact on the plant floor, correction is beyond our immediate control.

By confining discussion in this manner, I hope the emphasis will not backfire with the implication that no other matters harrass the perplexed manufacturing vice-president in the midst of his conversion program. All of the normal physical and administrative problems attendant to the initiation of any new program in any plant are present and exaggerated by time pressures. Plant layouts that looked so good on the board look far less attractive and efficient as machines are lagged into place. Tools and fixtures don't work in tryouts as advertised by the designers. Cost estimates of conversion begin to look as though they worked them out on a Ouija board. But this phase always passes and certainly most of these problems cannot be tabbed as peculiar only to the start-up of military production programs.

May I remind you, however, that much of the miracle of American production is directly dependent upon the day-to-day ingenuity of the production management, engineers, toolmen, and mechanics during this inceptive stage. At times we are inclined to credit a fast getaway on a production program almost entirely to superior planning. I wonder if master planners ever realize how good their planning is made to look by inspired improvisation on the plant floor.

In a sense today we will stand with the vice-president for manufacturing or the production manager. And with us I want the "plant rep."

The Plant "Rep"

Why the plant rep? Because he is by all odds the most important man in the military-industry relationship at the plant or operating level. As we will develop later, there is a fundamental difference in operating philosophies between military and industrial organizations. The problems arising from the resulting crosscurrents are susceptible to friendly and more leisurely compromise at higher policy-making levels, but they can lead to intense irritation and voice raising among the men skinning their knuckles on immediate problems in the production shop. The plant rep is the man responsible for holding such irritations to a minimum.

One of the principal reasons you men study production matters is to give you an appreciation and understanding of the role of the plant people. Many of you have been or will be plant reps, or will be in a superior position to plant reps. (In fact you may become the higher echelon bottlenecks plant reps tell us about.) Listen well!

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As I discuss the problems of production conversion with top production executives across the country, the subject of the plant rep enters most conversations sooner or later. Supervisors explain outstanding progress in terms of superior planning, better tool and production engineering, and so on--and then the comment comes "And of course Colonel X is quite a guy to work with." Or, "Hope the service never finds out how good Major Y is and pulls him--we'd be lost." Or "He works just like one of us--really a keyman in the team."

Interestingly enough, I hear few comments about poor plant reps. It's not that there aren't any. It's just that the plant manager with a poor one usually has no previous standard to compare him with. He doesn't know what he's missing. All he knows is that there are lots of miscellaneous troubles and that the Army--or Navy or Air Force--is to him a confusing and uncoordinated stream of visitors, planners, project officers, inspectors, auditors, and others. For these, the plant rep appears to be a useful sightseeing guide--but not much more.

Generally speaking, the old-line military producers--aircraft, fire control, and so forth--have fewer complaints along this line. They know what a good plant rep can do and have insisted upon men who fit the job or indeed have helped train such men. But the new producers--the converters who really need the help aren't getting enough of it.

The plant rep, or should be, the whole Defense Department on the plant base. He should feel free to draw upon all resources of the Department to move his producer along--and he should be able to press for action. He speaks for industry in military councils. He speaks for the military in industry conferences. He is industry in uniform.

Forgetting the uniform for the moment--aside from being a generally superior human animal there are certain outstanding traits which mark a good plant rep. Four are listed here. These are aside from the obvious requirement that he should be handsome, six feet-two, shoot golf in the seventies, and all that sort of thing:

1. He has true maturity--the sober wisdom that comes from consorting for some years with his unpredictable fellow men. Not the brisk brilliance of a promising young intellect.

2. He has a personal acceptability--the knack of getting along with people. He thinks automatically of the human factors involved in decision, is a compromiser and negotiator by nature--where compromise does not prejudice integrity.

3. He is a student of his assigned company and industry--he can probably tell you as much about the company, its historical background, its traditional problems, its people, as the top executives. I might pause here for a minute. I think this has some bearing on our own consulting work. It might be interesting to you to know that where we have men going into companies for a short period of time, where they may know the general industry but the background of the specific company has not yet been opened up to them, we sit down for a period of time--as many as three or four days--and actually have a little course in training these fellows. We tell them all about the company, the people, the executives--where they came from, what their educational backgrounds were, the presidents for 20 years back, what the big obstacle was of each man, and so on. I think you will find that your good plant rep does the same thing. He really knows his company. I might add that some of the fellows who haven't known the company have one h--- of a time getting along with some of the executives. These people are pretty proud of their company and what they have been able to do, and they resent some of the unschooled remarks as to shortcomings and blunders their company has made in its past history.

4. He has good judgment and a willingness to take what industry calls "business risks" based on that judgment. He might take as his guide the maxim "Consider the tortoise, he maketh progress only when his neck is out." Such men are in short supply of course. The trend appears to concentrate such men in military policy-making or central control groups where their talents may spread over many plants or programs--one or two steps removed from the point of action. Perhaps we should give priority of assignment to plant rep jobs, where a superior performance at the point of action would eliminate many of the matters which now clog the central staff groups. I know the people on the plant floor would welcome it. This, of course, is the industrial principle of decentralization. The armed services do practice it in spots--but there is a long way to go.

Where is Industry today in Conversion?

Now just where is the plant in its conversion process. I think we can truthfully comment here that on the plant floor we are in that darkest hour just before the dawn. However, it is dangerous to generalize on a complete industrial situation and to translate this generalization into a picture of the average converting plant. There just isn't any such thing as the average plant. It brings to mind the case of the statistician who drowned wading across the river with an average depth of four feet.

In the typical plants we are speaking of today--those that are undergoing a substantial conversion in facilities, production process, and tooling, we are pretty well down the road. This is particularly true in the primary sources. Operating policies, organization, and practices have been crystallized. Facilities for production are substantially complete

for turning out initial runs of materiel. Some improvised equipments and methods are in use and will be replaced with more efficient practices at an early date. The outstanding physical problems are matters of getting tools and equipments to work to the specifications and capacities advertised, matters of shaking down operating organizations, production controls, inspection techniques and so forth, and the procurement and installation of duplicate equipments to expand to the planned plant capacity.

During this period activities on the plant floor may appear somewhat chaotic to the untrained observer. It is a period of irritation and frustration with details. But there is a pattern and underlying orderliness to the activities. That is the time the much publicized "know-how" comes into its fullest flower. It is a time when the plant manager says, "Just leave us alone and we'll have this thing worked out shortly." Production is beginning to roll and the plant is nearing the foot of the steep upward output curve which comes as all the ingredients in the production program jell and the full power of the production machine is felt.

In general, secondary sources lag from perhaps six months to a year in this sequence. Many are only now completing buildings and receiving equipments. There is an understandable high level of frustration as these people watch the primary sources move into production. While the emphasis on getting primary sources rolling is understandable in the nationwide pattern of things, it doesn't provide a satisfying answer for the vice-president of defense production to give to his itching production manager who asks, "When can we get going?"--or to his president who asks the same question.

Generally speaking, the organization and planning of these secondary sources have moved ahead more rapidly than the wherewithal to produce has been forthcoming. There is an unhappy quietus during which many of the valuable profit-making assets of the company--executive supervision, production organizations, plant space, working capital, and all of the overhead of a sizable production operation--mark time awaiting the chance to move or move only at a crawl.

You have heard much talk of this in recent weeks. I can assure you that it is a very tangible problem on the plant floor. Laid-off workers wonder when they will be called back. Toolmakers wonder why they should not move on to other fast-moving projects even though they are still on a pay roll. Plant controllers wonder if the extended stand-by cost of the toolmakers and others will be recovered when the ultimate program begins to roll. The president wonders how he can justify the nonuse of his assets to his stockholders.

The plant rep and his superiors will do well if they understand the day-to-day urgencies of these matters with plant management. Indeed it

is during the present period that the superior plant rep really earns his reputation. Of course, he can't be an expert on all detail problems of conversion, but he should certainly be completely cognizant of some of the detail troubles stemming from sources where alleviation or correction is possible--at least in part--within the armed services. What are some of these?

The Schedule Merry-Go-Round

First, I have what I call the "Schedule Merry-Go-Round". I am not talking about the basement determination of requirements, although this is certainly a problem at higher policy-making levels, but of the manner in which these requirements are broken into detailed schedulas and the manner in which they are communicated to the contractor.

Detail schedules may be shifted back and forth adding 6 engines to this month, subtracting 10 from that month, and so on. The net result is that although the magnitude of the total requirements on the plant remains substantially unchanged, detailed fluctuations within a band of plus or minus 10 percent may be received in a constant stream.

Of course no basic changes in the production machine are required as a result of such minor fluctuations. You and I know, viewing it from the inside, that these are often simply the results of procedural paper work shuffles within the procurement activity. Old-line producers of military materiel are used to this phenomenon and not particularly upset by it. But newcomers may take it as an indication of an instability in the basic requirement--the advance rumblings of a volcanic shift in their total program. It makes it more difficult to inspire faithful, all-out effort on the part of the men on the plant floor.

More irritating is the practice of service representatives in passing along "informal" or "unofficial" advice on coming schedules or programs--each on an individual basis with little or no coordination. You get so you don't know who to believe.

One company I know of had at one time in front of it three different schedules from reasonably authoritative sources, each of which purported to be the schedule upon which to base the next two-to-three-year plans. First, the official contract schedule beyond which they could venture only at considerable financial risk. Second, the official planning schedule upon which they were asked to develop their new facility program for which "the service had the money and wanted to move on yesterday." Third, an official advance procurement schedule "that would be coming through for negotiation shortly."

The variance in quantities was of a multiple nature. Depending on the schedule chosen, management would decide to rehabilitate the present

plant, to substantially expand the present plant, or to abandon the site and remove the plant 100 miles or more away--a matter involving millions of dollars for which a source must be found. Since all three schedules purported to be the basis upon which future planning should be done, is it any wonder that plant officials were tearing their hair? This is a severe but not an isolated example. There were reasons behind each schedule. Every man who passed it on to them gave it to them with good intent, but most of this concern--and this is my point--could have been avoided if a good strong plant rep had been on the job.

The Ghost Subcontractors

The second point of frustration is what I call the "ghost subcontractors." In our industrial planning we set great store in our planning of a second source procurement pattern--the ghost pattern--for major items of material. Now that we are looking into activating these programs, we find that some of the subcontractors and suppliers are more ghostly than we ever expected.

The matter of poor subcontractor source selection by the service mobilization planners, while not a lethal problem, is still more prevalent than is good. This is especially true where second source prime contractors have been set up and handed a list of the subcontract sources which have been cut into the program. Since the philosophy of a second prime contractor program is to develop a new and independent procurement pattern for the end item, it follows that many of the second- and third-level participants are new to the game.

Newness and inexperience per se is not the point at issue. It is rather that investigations of financial capability, conditions of production facilities, actual plant capacity, skills of management and workers, and so on, were inadequate to establish the basic competence of the source. I believe the problem is a result of (1) lack of time to evaluate potential sources properly, (2) rank inexperience on the part of many of the survey people, and (3) superior salesmanship on the part of some of the potential sources. At any rate some prime contractors are paying through the nose today.

Two years ago we commented that one of the weaknesses in planning as we then saw it was that an attempt was being made to cover the water front without regard for the quality of the coverage. The entire scope of what we would like to do is often beyond our capacity to do. We then face the choice of doing a few things well or trying to spread our coverage with the certain knowledge that the effectiveness of our work will fall off. Such attenuation of effort can result in a completely wasteful dispersion. Not only do you expend all and get zero effectiveness but you may well, under pressure for performance over too wide an area, actually produce unsound and erroneous planning which can bring disaster. It seems that this has happened in some of our source planning.

This matter is of extreme importance since it is improbable that we ever shall find it reasonable to develop mobilization plans for every potential participant, large and small, in our emergency production program. I think it well for those of you who go to mobilization planning posts to grind this thought into your memory--a little quality at central points is worth more than mediocrity across a wider area.

How Do We Tool our Plant?

The machine tool or equipment problem, apart from the basic problem of nationwide shortage, may be eased to some extent at the plant level by using well what we have and asking for only what we really need. We can seek every available substitute process or special tooling, and failing, we can intelligently support our request for key equipment for which there is no substitute.

Special-purpose tooling is a matter of some debate. It is largely a matter of inflexibility versus flexibility in the processing capabilities of the plant or shop. The special tool approach is a matter of a highly analytical production philosophy. For example, there are a few basic factors to be considered in a specific processing job--the cutting job that has to be done on a piece of metal. The piece must be held and supported; it must be cut to a certain accuracy; a certain power has to be applied to the cutting device; and a specific cutting motion is required. When all of these elements are provided to the maximum degree by the general-purpose machine tool, that is fine. But lacking the availability of that tool, what do we do? In looking for substitute tooling, it is possible that only one or two of these factors need be engineered into the tool for this particular part of the process.

My own inclination is toward more special tooling and improvisation during this machine-tool shortage period with replacement by more flexible, general-purpose tools scheduled as machine-tool production capacity permits. Certainly, in the long run the general-purpose tools have the advantage in that the risk of their needing rework or replacement, whenever new or modified products arrive, is far less.

On the other matter of precise determination of which tools are really critical and then their most efficient allocation, some progress is being made. But as I watch the frenzied labor of the government agencies, I wonder if here is not an administrative task we could farm out to private industry to a greater degree. If so, the private industrial organizations selected should be those with their major stakes in the specific production program and not some third-party organization. You would need the emotional urgency that comes from the knowledge that you are working to your own best interests to do a good job.

It might well be that the development of a production program for one major product line could be entirely delegated to the proprietary prime contractor. He would then have the responsibility for coordinating all elements of the entire program for all his supporting subcontractors and suppliers in so far as their requirements were directly based on the basic program need. In this way it might be possible to turn over an immense amount of the administrative detail to organizations which by nature are experienced in exactly this sort of thing and of which enthusiasm for the job would be sharply whetted by the knowledge that they were working on their own baby.

Certainly the automotive industry has had long experience in exactly this sort of coordinative planning with rank upon rank of subcontractors and suppliers. It would appear that small business would benefit in having its tool and materials requirements supported by clearly identified relationship to the basic product program without having to go independently to its service agency. It would seem that the principal contractor might be sold on undertaking the coordinating job at cost simply because of the ultimate benefits in keying this planning directly to the production program for which he is responsible. There has been considerable thought given to such arrangements and some companies have moved in this direction on their own. It may well be too late to gain much from this concept in the present period, but it has much to recommend in future planning.

A few further comments on the current machine-tool problem are in order at this point. It is of course our most publicized planning inadequacy.

I believe that we are over the worst hump on this if our present program parameters are maintained. It is true that backlogs remain enormous and the recent setback of many production programs is traceable directly to the delayed procurement of tools. However, recent allocation programs have put more of the critical tools in the hands of producers of critical items. By and large, things are looking up for the primary source producers and I hear fewer complaints for managers in these plants. The tool-shortage headaches are currently concentrated in the ranks of secondary sources (who were late to the order party) and producers of less critical items. Another year should see the problem, as currently defined, pretty well solved. But lest this thought inspire complacency, I see two great dangers.

The first is that we may, with the solution to the present situation in sight, forget that a worsening of the international situation or all-out war will throw the problem right back in our laps again. We'll need even more machine tools. And we cannot draw hasty comparisons with machine-tool production capacities which saw us through World War II. The increased complexity of weapon systems brings with it a corollary requirement for

more and more machine tools--more simply, to give us greater available machine capacity. More to replace older-style equipment which will not work to the tolerances and finishes required today. More to do tasks never before contemplated for machine tools. We can't sleep on this one.

The second danger is that we may forget that the mass of machine tools produced for World War II and still in use today is from seven to eleven years old--and some of those years were in hard service. Even allowing for excellent maintenance, rebuilding, it would seem probable that a bulge of replacement would occur perhaps in the period 1955-1960. The spectacle of us scurrying to meet this replacement requirement at the same time we try to put new capacity into our plants to meet an all-out war need must lead to some amusing thoughts on the part of the USSR peace planners as they look at a 1955 M-day. Perhaps some of you can do something about this matter in the positions to which many of you will go.

Was this Thing Actually Designed for Production?

Inadequate production design is another problem for us on the plant floor. With full realization of the problems inherent in throwing weapons improvements into production as soon as possible, the fact remains that some of the production designs handed to contractors just wouldn't be tolerated in private, commercial design. Sure, there are lots of good ones but too often designs show a lack of knowledge of basic production processes, a lack of knowledge of the materials being worked with, and just plain errors in mechanics, tolerances, and so forth.

On one tank there have been 20,000 part changes in a little less than a year. The tank has only 8,000 parts. I could go into averages but you remember the story of the statistician. Sure, many of these changes were of a completely legitimate character--but far too many represented hurried or substandard original production design.

A hydraulic control system breaks down under hydraulic shock, although the principles have been known for years. A grill doesn't fit because of poor tolerance selection. In a change to increase speedometer shaft speed the gearing at one end is changed but nobody changes the power take-off. Result: Speedometer reads one-half speed. Small matters in the over-all? Yes. But they kill us on the production floor. And the trend is up. Perfection will never be obtained but improvement is solicited.

The last two points of current irritation on the plant floor are indicative of even greater problems in future programs for newer and more technically advanced material. First, because the more complex weapons coming from research will pose an equally complex problem in production design. Second, because the machine tools and equipment to produce the parts will increase in complexity.

On the first matter, our Nation's military strength relies increasingly upon new technologies and the new weapons systems derived therefrom. As these new weapons systems become more complex, so the problem of reduction of this complicated material to feasible production designs becomes more urgent. There is required a design ingenuity that is too often lacking in much of our material. At least part of this is that designs are prepared under the comforting thought that only a few will be made anyway--we'll redesign if we really go to big production. I haven't seen many of these redesigns--and I have seen the mass orders.

In Europe a gadget is designed to work--why go further. In America a gadget is designed to work and then designed to be made. That's the secret of our mass production.

An automobile manufacturer I know of, getting ready to design a new engine, looked first at the low-cost-production processes which might conceivably be used and then literally designed his engine to accommodate the selected processes. This is what we aren't doing enough of and it hurts on the plant floor.

At the same time our production design requirements increase, advances in manufacturing techniques in industry generally are obsoleting the mass production experience of World War II. But the application of these new manufacturing techniques to our new weapons has lagged in the pre-Korea years and there has been no time since to take the time to do it right. Yet if our collective national security rests upon our ability to expand our production exponentially at the dropping of the first bomb, we had better be about this business. Some of you may have heard the talk by Mr. Wilson the other night. He worked over this matter for 30 minutes, very well, too, so I won't attempt to repeat it. He pointed out some of the differences between today's production achievements and those of World War II. An average peacetime production of aircraft would amount to 5,100 per year while in wartime requirements for aircraft would probably run above 50,000. He mentioned the fact that when the B-29 was scheduled for production in 1943, we had some 500 planes scheduled for production that year. Under conditions of all-out mobilization, with everybody throwing all his talent against the critical problem and we only got some 90 in 1943. Some of us are apt to forget the fact that we didn't do wonders in World War II. In many cases we didn't meet schedules.

Some of you will recognize in this my old tale of the "production development gap." I still worry about it. But within the last year I have gotten at least one big lift from a proposed program in one of our most respected and successful research laboratories. This laboratory had attained some promising results from experimental work on an

advanced weapon system. The next general phase involved an initial fix of the design for experimental production. Recognizing that as the twig is bent so grows the tree, the laboratory solicited the assistance of manufacturers with demonstrated production know-how in the required fabrication, suggesting that one or two of their top production engineers join the project in its infancy. Now this is really looking ahead--may their wisdom be blessed and their tribe increased!

The Battle of Paper Work and Administration

Now some administrative bumps that might be smoothed out. I believe that administrative problems in conversion are often more irritating than physical production problems because so often they involve a signature or the lack thereof, a lost piece of paper, interpretation of a specification, and so forth. Two contributing factors to administrative frustrations "strange case of the military mind" and the quality of government personnel in the plant. Now don't jump me--nobody is blaming anybody--they're just some facts we have to face.

This matter of the military mind in an industrial environment is a worth-while point for discussion. By military mind I don't mean the mind of a man in uniform. Rather I mean the traditional philosophy of organization and operation in a military body. The philosophy in its sterner form is characterized by sharply defined single chains of command, absolute and undivergent compliance with superior instructions and the dominance of procedure over the man--who may come and go. The pattern has its roots in the smoke of the battlefield where authority must be unquestioned, compliance automatic, and action by intuition. A more democratic process might be socially laudable but would lead to a lot of dead democrats.

In the last two great wars the dominant activity of personnel in the military has moved away from combat toward logistics and industrial matters. And yet military upbringing retains--and understandably so--much of the aforementioned pattern.

We just don't operate this way in industry. And where the two currents of philosophy meet there is bound to be some turbulence. The reduction of this turbulence is a primary purpose of this college and a primary mission of the plant rep.

In industry our relationships are of a much more informal nature. While channels of organization are defined, informal operating relationships often actually control the activities. A goodly amount of ingenuity and improvisation is expected of young, up-and-coming production executives and mistakes are expected and allowed for. Men take precedence over procedures which are often modified or forgotten if they interfere with the

performance of a good man. And above all, the competitive race with personal progress measured in dollars of economies effected, increased units off the line, and decreased rejections can bring a man up topside fast enough to make it worth-while to stick his neck out if he thinks he can bring in a winner.

This is the world the plant representative steps into. You can't change the military system but you can make use of all flexibility provided--and there's quite a bit if you look for it--and where you can't flex it, you can at least explain to your plant manager why you're taking the action you are.

Too often the service and government representatives simply take refuge in the sanctuary of "standard operating procedure" and it's worth your life to flush them out in the open to exercise a little judgment on their own.

As to the quality of people, little can be added to what you already know. There are limiting factors of Civil Service regulations, pay scales and so on, that are beyond your control. But you can't brush over the problem, because it leads to more personal friction on the plant floor than any other single factor.

Ideally speaking, each government representative--in uniform or out--should be a fair match for his opposites in the plant. Speaking frankly, industry can get the better-trained and more-experienced men. In many places the government representatives recognize this and lean heavily on the plant people for technical advice--learning and advancing their own competence as they do. But in other cases we find an unfortunate, small mind invoking all the traditional power of the Lord and the United States Government to support his hasty, unwise decision on a matter of no importance in the first place.

These are underlying factors which require patience and understanding if we are to live together in increasing wedded bliss in the plant. But here is what they lead to in the wayof specific procedural problems that get more or less universal mention. I won't attempt by any means to hit all of them, but mention of several may give you a better idea of some of the minor irritations I am talking about.

Control by Total Check or by Exception

One thing that confronts us over and over again is the general lack of understanding on the part of government plant representatives of industry's "control by exception" principle. Generally speaking, control by exception is applied pretty well across the board on anything that we have to control--project progress reports, labor costs, purchase order

follow-ups, inventory check. We feel that if a control procedure is set up and pretty firmly established, the elements that get out of line to an important degree will be spotted in time for corrective action to be taken. Unless we see one of these elements pop out of line, we assume that things are generally well in our day-to-day control follow-ups. Of course, all of our control systems provide some means for a final detail close-out if necessary at which time we can account for all items originally under the control at least to a degree beyond which further reconciliation is a waste of effort.

On the other hand, the traditional government control procedure is one of accounting regularly for every last item in a long list of controllable items. It is seemingly more important to have all the "i's" dotted and the "t's" crossed than to let the control system quickly flush out the critical items for preventive action. Service representatives often feel that industry is haphazard in its control systems. Industry feels that the service representatives are just a bunch of detailed pencil pushers. Actually the essence of any control system--whether it be cost control, inventory control, purchasing control--is to clearly show up those irregularities which are central to the problem and to relegate unimportant and peripheral irregularities to the background. So if our inventories are off by a few cotter pins--please don't call a mass meeting; we may be out chasing a main bearing that will stop production next week if we do not find it.

Inspection Coordination

Another matter that bothers us altogether too often is the matter of coordination of inspection. Sometimes this lack of coordination is simply the variable personalities of government inspectors from one plant to another; sometimes it is just a procedural tangle. However, the fact remains that the men on the plant floor still feel that there are too many holdups of an administrative nature in the government inspection channels.

For instance, a deviation from specifications on a specific part going into final assembly is granted by inspection at plant A. At plant B the same part, presenting the same problem of manufacture, is denied this deviation from specification. It is not a case of inspection of plant B not having the authority to grant the deviation, but it is a matter of an honest opinion that the deviation is unwise and should not be granted. Now plant B personnel are fuming, because their competition in plant A is getting out more production at lower cost because of the simplifying deviation granted.

An even more direct example is that of an inspector in a subcontractor's plant accepting parts and subassemblies only to have the inspector at the assembly plant reject these same parts or subassemblies

on the receiving platform--with the same specifications supposedly obtaining in both cases. Now I assure you that this sort of thing does happen altogether too often. It is true that such messes are often cleared up in a matter of a few days, but a few days seems like a century to the foreman whose line is down.

The Coordination Nightmare

When I was a small boy I often dreamed that I was running to catch up with something my life depended on, but I was always running knee-deep in molasses-like mud. I was always glad to wake up and realize that real life had no such mud. Now I'm not so sure.

The plant manager's nightmare is filled with friendly smiling government people who say, "Sounds good to me, but, of course, I'll have to coordinate it."

The very nature of military organization requires that final decision affecting two lower elements of the organization shall be made only at the point where the chain of command coming up from these two elements finally hooks together. Thus, relatively unflexible procedure forces many matters of simple controversy up four or five rungs of the ladder and then back down the other side for check. This sort of thing takes altogether too long, particularly if several interchanges are necessary. I grant you that major problems are quickly brought to a head by personnel conferences and expediting action. But I am talking about the endless list of minor controversial problems which are not worth the extra-procedural action, but which, as they pile up, also pile up irritations on the production floor.

I personally believe that much of this is unnecessary. In my firm's work we have an opportunity to see both sides of this picture. In my opinion the service representatives at the scene of production operations actually are granted, by written policy and procedure, more lattitude and flexibility of decision than they see fit to use--thus more matters are referred to higher echelons than should be the case. This increased flow of inconsequential details to higher echelons builds up the work load at these points and so on up the line, until the entire work load of the service has been compounded several times.

May I again suggest that the principle of decentralization as practiced in large industry today be examined more thoroughly as to its potential application to some of these service procurement problems. In industry it is somewhat generally accepted that the best way to have four men run three plants is not to have all four of them in a central staff office which is the top brain of the complex, but rather to have one of them running each plant and the fourth man sitting as a communications center only on problems which affect all plants.

Detail--by the Bucketful

I speak now of the "May I have one of everything" complex. There is no reason why a plant or an industry has anything to hide, and so there is no particular reason why government representatives in the plant should not have one copy of any report that comes out, plus special reports they may request. I wish I knew what they did with all of them. I am afraid it is still an example of "detailitis."

Details are the easiest thing in the world to accumulate a lot of and the hardest to shake loose. Mankind generally has a knack of becoming hypnotized by figures and details to an extent that he loses sight of the controlling relationships in a situation. The collection of this detail implies the requirement to sit down and try to make something of it--and that takes time just when your time should perhaps be spent out on the plant floor digging into some problem that has production blocked. So, I plead again with the plant representatives not to unthinkingly collect reams of detail in the hope that post-collection analysis will show you the reason you collected it in the first place.

Now I would like to get away from specific procedural problems at the plant level. I believe that you have the gist of the plant manager's problems pretty firmly in your mind and I hope that the few examples I have been able to sketch serve to emphasize some of the more frustrating frustrations. You will notice that I have refrained from mentioning names or identifying situations precisely for obvious reasons, but all are backed by one or more case examples.

There remains one matter I wish to touch upon. This is a far less tangible matter, yet one which permeates the management atmosphere of quite a few of our converting companies. It can be identified generally as a form of disappointment of disillusionment. You should understand it, both so as to be helpful in easing it today and in preventing it tomorrow.

In World War II, with Pearl Harbor driving us as a nation, production urgency was of such a degree that industry knew there was no turning back. Peacetime production was swept out of the window. Extraordinary measures were taken by the Government to move industries into production of war materiel. Informal arrangements and simple good faith got many programs rolling. The monies and the final arrangements came through in the long run. By and large, nobody got "stung."

The same opening scene was repeated to a lesser degree at the time of the Korean invasion. Again industrial companies were only too glad to commit themselves to production programs in extremely informal bases and in good faith. But we are still not operating under the compulsion

of an all-out war. Budgetary influences are at work. The armed services have found themselves at a loss to actually support many of the informally committed programs to the extent anticipated at the time of original commitment. Companies whose original participation was solicited for, say, 200 engines a month now find themselves with the actual program which can be financially supported by the military set at, perhaps, 100 engines a month. These people look forward to a substantially lower utilization of their facilities, financial capacity, and organization than they have been led to expect. It is natural that there should be a lot of second guessing and that some managements today sincerely question the wisdom of their first rush to the colors. It is not my intent to point my finger at any particular source for this trouble. The factors behind it are many and diverse. However, I think it well to understand that this feeling exists and that the future dealing with industry take this feeling into account.

Another similar matter concerns contract form--particularly redetermination contracts. In essence the redetermination contract states an approximate price and leaves the specific pricing to be determined after the program has gotten under way and the operation settles down to some sort of an orderly and predictable pattern. Unfortunately, this postponement of the reckoning is conducive to a certain amount of laxity in the early days of the program, since "everything is to be fixed up six months down the line when we really determine our price." There is a tendency to overlook some necessary detail and to push minor matters as to what costs are allowable and so on, off into the future.

As a result, some companies at the time of their redetermination have been anguished to discover that in the Government's eyes certain of their early contract activities are considered unreasonable and not allowable as cost items. Or even more frustrating, that certain items appear generally to be allowable as cost items, but lack any acceptable supporting detail. I believe that in several cases if managements had it to do over again they would stop to learn a lot more about method of operations expected of them and would move more slowly in the inception stages of their projects to the end that they were moving faster and more certainly today. It is just a matter of building a sound base.

I've talked enough. I hope that my remarks have given you some food for thought on military-industrial cooperation at the plant or operating level. Time has, of course, required that we examine only certain points of irritation or potential dislocation. But there is far more success than problems. I have spoken for half an hour or so on problems. To achieve proper subject balance, I should have to speak all afternoon on the good things. That, too, would then be a problem.

You know, of course, that the matters we have discussed are but the bickering of a well-wedded team. If we in industry didn't love you so much, we wouldn't complain so much. Thank you very much.

QUESTION: It seems to me that this plant rep is pretty much on the fence most of the time. If he gets informal information and doesn't transmit it to the contractor, the contractor will undoubtedly eventually learn about it one way or the other and ask, "Why didn't you tell me about this?" If he does give informal information to the contractor, the contractor thinks he should do something about it and it leaves the plant rep in the hole either way. What is the plant rep going to do? You said a good plant rep ought to do this.

MR. POCOCK: In the first place, let me admit that I fully realize that the plant rep is a SOB to the service because he has gone over to industry and he is a SOB to industry because he represents the service. So not only is he on the fence but it is a picket fence and he is sitting on the points.

On the matter of informal information, it may come from three, four, or five different agents. I believe the problem is greatly simplified at the management level when information, comments, and so forth, pass--regardless of source--through one pair of lips. Coming out of one mouth it implies a certain degree of judgment and evaluation given by the plant rep as he discusses these things. "Sure, I have heard that," a good plant rep sits down with the management and says, "This is the schedule that is going to the Air Force. From my personal visit back to Wright Field I really believe schedules are coming in this direction, and these reports given to you will be correct. It is very true that a very smart, long-winded guy may have come down here to try to needle you. It is his job to needle you, I guess. But in my opinion his programs won't go very far so far as the official program goes.

It is the single mouth that I am talking about. In the case that I cited, it was not a full-time plant rep but it was a fellow who had just recently been given several different plants to watch over. He was not on the base when this happened. He was trying to catch all the balls that were flying past his head. There was no coordination whatsoever, so it got to be rather a tangle to the board of directors.

QUESTION: Pursuing that further, aren't the plant executives quite at fault, too, in having their representatives here in Washington or at Wright Field or some other place and in doing their G-2 work, finding out a lot more things than any little plant rep can find out, by walking into the chief's office and saying he won't talk to anybody but Joe Doaks?

MR. POCOCK: You are referring to the contractor's "Counter Intelligence Service." I think there are far too many contractors who put too much reliance in what they consider to be a rather smart and capable representative who is just sashaying around picking up informal viewpoints. I think that is bad because any time you have one man going around picking up informal comments, you find when he relates those comments back to the contractor, he gives them the prejudice, the optimism, the pessimism of himself, and yet he is not in a position, because he is away from the company base, to understand the impact of his casual comments back there. I think you're right.

I think the best representative of the plant to Government is possibly the man who sits right there at the plant and works directly with the plant rep, making only such trips into the field as are necessary to pick up information that is definitely needed on the program. I feel pretty strongly on that.

QUESTION: To carry on the friendly little feud between industry and us--I saw the sort of people who answered the call to the colors right after Korea--in fairness to the service how many were patriots and how many were looking for juicy contracts? I would like an honest opinion. I think I would break them down into three categories. First, I think you do have many people who really want to contribute their efforts. There are many very fine companies in the country that actually at that time, I know, sat in executive session and made a formal decision or passed a resolution in the board of directors calling for them to go down and see what they could do to help out, even though it meant cutbacks in their own production, in their own profits. They were not looking down the barrel of a gun when they considered cutbacks in their own manufacture.

I think at the same time there was a very large group of people who knew that with the cutbacks in production, they would have their own profits cut down, which would mean budget slashes unless they could get into some sort of military production to keep their plants going. I don't think that is an insincere motive. I believe that is just the spirit of American competition. I think it is a good thing for the military to harness that sort of competitive urge to its own uses.

I don't think there is any getting away from the fact that there were people and companies that rushed in to see if they couldn't pick up some gravy, particularly since it has become rather a fixed policy that the Government will support facilities, financially, and so on, for the manufacture of military materiel. Such facilities obviously having at least a certain residual usefulness after the military program is over or when it is reduced. I don't think you can get around it or escape the fact that there was quite a bit of that.

I would say--just so it may not sound quite so bad--that a lot of those last fellows didn't get in. Some of those fellows who did get in showed their lack of competence so early in the game that they never got away from home plate. But it is there; I won't deny it.

QUESTION: Could you classify these companies that you have classified in three categories as limited firms, intermediate firms, and rank opportunists that probably have a garage and want to go up pretty fast?

MR. POCOCK Some even ask you to pay for the garage. I think by and large the third category is almost entirely made up of rank opportunists. It is the smart promoter type, the fast talker who wants to make a quick profit and get out. It is some guy who may have been looking for an honest opportunity and who sees an opportunity here where he may be able to skyrocket fast and where he won't have to put too much into it himself because he hasn't too much to put into it, but where he can ride on a skyrocket to high profits.

I have no sympathy with such people when they do go into it this way and then aren't willing to accept 2-percent profit or a 1-percent profit, something like that, because it is profit on somebody else's capital.

I think by and large, in the second category that I spoke of and in the first, you would find the very large responsible companies and the many modest companies with a very great degree of responsibility in American industry. Last year, as I remember, I laid out and tried to gather together a composite statement of the aims of some of the larger companies in going into war work. I have forgotten just how I did lay out all the points, but I think I remember some points which were pretty common.

One was, "To make money out of our facilities and investments. We have that responsibility to our stockholders." A second point was, "To keep the executive and supervisory group together, working as a team because it takes years to build this team up." A third point was that, "To accept our corporate responsibility to the community to keep jobs there." One company, the dominant employer in its community, as I remember, was in a field that would probably be swept away. It wouldn't be doing any work at all in war work. It was in the soft goods field. It thought it ought to get over from soft goods into hard goods because that would be the dominant requirement in war production. While this company didn't have the right kind of facilities and would have to build new facilities, it actually developed that sort of program. It was to hold jobs. It would have no opportunity to get a profit for many, many years.

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A fourth point was, "We want to serve the Nation." I don't think it is wrong to say that most reputable companies feel very strongly that they should be participating in a military program and so lend their strength to the national muscle. Some may feel so because if they did not do it, people would think badly of them and it would prejudice their opportunities in the postmobilization period--give them a bad press. But even this isn't entirely bad. It is just one more manifestation of what I call the competitive system that we have in this country.

COLONEL KLEFF: On behalf of all of us, Mr. Pocock, I thank you for a most interesting lecture and discussion period.

(14 May 1952--350)S/mmg.