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INTRODUCTION TO PUBLIC SERVICES

13 February 1951

COLONEL VAN WAY: General Holman, fellow members of the Industrial College: It is my purpose this morning to introduce to you the course in "public services," of which you first heard yesterday when you received the curriculum book for Unit VIII.

I would like to say in passing that for some of the members we opened this a good deal more dramatically last Friday when we told six of them they were to make oral presentations. The subjects for those oral presentations will be given out shortly in a memorandum. You will also be given the names of the people who will make them. If you have not been told, you will not make an oral presentation.

The Public Services Course is among the last of those that you will have for this year; I think you have three more yet to come. This is due to the pattern of scheduling which was set up when the course was planned. Actually, you began hearing about these particular parts of this course as soon as you started the over-all Economic Mobilization Course, and you will continue to hear about them for the rest of this year.

This particular course will last from 13 February until 15 March 1951. It will consist of 21 periods, including 8 lectures, 5 seminars, 2 periods for these oral presentations I have just mentioned. That will leave you 6 periods for movies or study.

Since you know them already, I will not formally introduce the three instructors other than to mention their names. Transportation will be presented by Mr. Sam Hill, who also will speak to you later on in this period. Mr. Swaren of the Production Branch will present to you the course in "power," in which he is a specialist. The field of "telecommunications" will be presented by Colonel Ennis.

I believe each of you heard me on one occasion or another during the Manpower Course emphasize the complete integration of the elements of that course with the whole year's course in economic mobilization. I can think of no more suitable introduction for this particular course in "public services" than to relate them in a similar way to the instruction to be given during the rest of the year.

These subjects that we are going to present to you have several important elements in common. They are nationwide; they represent large capital investments; they have a continuous and fairly stable operating volume; and their demands for manpower, while modest in number, are high in quality. Now, Mr. Hill differs with me somewhat on the demands for

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transportation being modest in number. I think, when compared with many of our industries, the demands certainly are not excessive; however, they are high in quality, as I say. They are characterized by a comparatively high capital cost per job running as high as \$94,000 per job in the electric power industry as compared to a national average per job of \$7,000 or \$8,000. For this and other reasons they are not readily capable of rapid expansion except under the stimulus of war mobilization.

The transportation industry is basic to war production and to military operations. Like other industrial activities, it is vitally and sometimes seriously affected by shortages and readjustments necessitated by the war effort. Manpower shortages are perhaps immediately apparent. But also important are war material restrictions and increased traffic loads. Enemy action may be expected to interfere seriously with planned traffic operations. We are interested particularly in the organizational relationships between the Department of Defense and transportation. Accordingly, we shall present the functioning of the Military Traffic Committee to you by a lecture and through seminars.

The power industry in this country has been characterized by recent technological development and great expansion. Despite this, power developed by steam is still cheaper, more flexible, and is capable of being more rapidly installed than any other form.

A fundamental fact relating to power is that, like gold, it is where you find it. Steam power can, of course, be readily generated anywhere without requiring as much time as for hydroelectric power. But even so, an industrial plant can be developed in much less time than can be the power for it. For example, almost any plant can be built and put into operation in from 7 to 9 months. A moderate-sized power plant, on the other hand, takes from 12 to 15 months. Larger plants take two or three years. Hydroelectric development takes from 3 years on up; sometimes it takes as much as 15 or 20 years.

But it may be uneconomical. In those cases where enormous quantities are required, as in the light-metals industry, cost may delay its development in certain areas. Accordingly, the location of power already developed is a strong factor in the location of industry. This factor may operate in conflict with the availability of labor, as in the west and northwest; or it may not be in harmony with the location of raw materials or transportation. As a good example of that, I might draw your attention to the aluminum industry where we find the raw ores processed in the South and the final processes completed in the northwestern and northeastern parts of the United States.

In this Power Course we will present to you an outline of the salient features of INCODEL, which is a term we use to denote the Interstate Commission on the Delaware River. This is an agency set up by voluntary agreement among the several states and communities using the Delaware River for the purpose of bringing some degree of order to the increasing usage of its resources.

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Now, this is not the only organization of its kind in the country; nor is it the largest. But it is, we think, typical of the emerging trend toward voluntary association of interested civic bodies on a regional basis toward the solution of their common problems, which cannot be readily accomplished by the normal political agencies of government--Federal, state or municipal.

Our attention in telecommunications will be devoted primarily to its requirements for material and manpower which may be in conflict with those of the military services. We are interested also in new technological developments. The extreme vulnerability of the elaborate communications network to sabotage or other enemy action will be a matter of concern to us. Its role in support of the industrial and military effort will be emphasized.

The keynote of all these public agencies of service is coordination. Not one of them is complete in itself; not one of them is a monopoly; and not one can be properly controlled by bureaucratic edict. Yet they must operate harmoniously and in accord so that efforts are not duplicated; that conflicts do not occur; that the public needs be served. The organizational structure, the principles of operation, financing and control form the basis of our presentations of these vital areas of our national economy.

To initiate our Transportation Course, we will hear from Mr. Samuel Hill. He is well qualified by experience and study to discuss transportation, having been for some years with the Pennsylvania Railroad in many capacities. His work on his doctorate is in the field of transportation financing. As a crowning bit of evidence of his skill in the transportation field, let me point out that he can with great ease and apparent accuracy read a railroad timetable.

Gentlemen, I should like at this time to introduce to you, Mr. Hill.

Mr. Hill.

MR. HILL: The purpose of this lecture is to lay a foundation along several lines, and especially those in which we think you should be well informed from the standpoint of future managers of our economy during times of mobilization.

The first purpose of the talk will be to assay the preparedness of the several carriers to meet the demands of mobilization--how ready are they to take up the burden during mobilization and thereafter? Second, to examine the relationships between the carriers and government; and, third, to analyze the liaison between the military and the several transport industries.

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Transportation has two aspects. Last week you saw a movie which was sponsored by the Production Branch on railway operations, entitled "Fast Freight." It was entirely proper that you should see a railroad movie under the auspices of the Production Branch because transportation is really a function of production. That is the way it should be considered; unfortunately, this is not always the case. For example, during the last war people thought of transportation as being a separate industry which was considered not quite so important to their requirements as those of us who were close to it thought it should have been.

In other words, transportation has been so much a part of our daily life that we take it for granted. Much of the transportation language has become a part of our daily life. For instance, the word "highball" comes from an old custom in England of raising a signal to the top of a mast to indicate the way was clear for an oncoming train. We know now that "highball" means we have a clear track to go somewhere fast.

The first chart we have for you is a description of the contributions of the various carriers toward the burden of transportation. (Charts were not reproduced.) As a matter of fact, we have two charts. The first one shows freight operation. (Referring to chart.) Over here, the green shows the proportion of ton-miles of the Nation's traffic carried by steam carriers. The white is the Great Lakes carrier system. That, of course, is a special industry all by itself, taking ore eastbound from the head of the Lakes to the eastern lake ports. The yellow represents the inland waterways. During this period, of course, motor trucks were very unimportant. Oil pipelines were not very busy. The airlines we can leave out.

Now, as time went on you see that the rail portion of the grand total has been declining. That is important to remember, for reasons which I will discuss with you later. The Great Lakes carrier system has been "holding its own," about, but it has been increasing in actual tonnages.

The motor trucks have been showing a rather steady growth. During war we know this decline here (indicating) is all because of the difficulty in procuring gasoline and tires. Pipelines have been showing quite a substantial increase because the economy of moving oil by pipeline is substantial over the former type of transport, in railway tank cars.

Here we have the traffic in passenger operation. The steam railroad was formerly very high. However, it has been going down due to competition from, first of all, buses (shown in blue), and, secondly, air carriers (shown in pink).

While the volume of tonnage is important, it is not everything. I do not want you to get the idea that the railroads are quite as important as the tonnage figures seem to indicate. That is also of significance

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to us because it means that the railroads are losing a lot of so-called high-grade traffic to the motor trucks, which carry the highest rated traffic. It means that the railroads are less willing to invest money in new equipment, especially boxcars of the type which is going to carry war traffic, than they would be had they had more of a monopoly of the transport picture.

The first point of interest in talking about railroads is: What should we look for in the railroad picture to see if they are ready to carry the load? As for motive power, the change has been from steam to Diesel. New modern Diesel locomotives are being ordered just as fast as the railroads can get deliveries from the builders.

The next point of inquiry may well be the tracks. The railroads have done a good job in cutting down gradients and in eliminating curvature, which is an important element making for an efficient system of operation. They have installed many devices to speed operation, especially signalling. That is really the most important feature. You may know about an invention called centralized traffic control, which means a dispatcher can sit in his office at one of the division points and run a railroad right from his desk. It has meant in some cases the elimination of a second track because you can have equivalent double-track operation on a single track through centralized traffic control.

The maintenance and operation of the terminals have been satisfactory. There is, in general, a complete adequacy in most types of terminals. But there again terminals are not all just one type of railroad facility. As a matter of fact, we have various types. You have grain elevators, oil depots, and perishable terminals. So that we should examine the capacity of the various types of terminals with the people who will come to us in the seminars and lectures to see what they think about the capacity of the terminals; whether the terminals, located where they think we are going to need them, are really going to be able to carry on the traffic which is offered to them.

I have saved this freight-car situation for last. That is really the crux of the matter. (Referring to chart.) This shows the deliveries of freight cars by years. This black line (indicating) shows the actual deliveries. Down here 1950 is shown in red. The figure is down to 45,000 cars a year for the average installation.

Now since retirements have been at the rate of 95,000 cars a year, the railroads are reducing freight-car population by about 50,000 cars annually. This (indicating) is the rate of population which we believe should be established to prepare for readiness in 1953. Incidentally, the year 1953 was chosen arbitrarily; there is no reason in the world for choosing that year particularly. This (indicating) is the average rate over the last 27 years. The 1950 figure shows an average of about 45,000 freight cars of all types delivered last year.

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The footnote points out that to provide ownership adequate to handle efficiently a traffic load 5 percent greater than in 1944 by 1953, a program should be initiated immediately calling for a production of 160,000 cars a year. The year 1944 was chosen as a base because that was the year of peak traffic during the war and in trying to get a reasonable figure we said, "Let's expand the peak year of 1944 by 5 percent and see what that gives us." That is what that means.

First of all, we should have a surplus of 50,000 cars if we are going to have an absence of shortages. Just keep in mind, gentlemen, this figure of 1,920,000 cars is a total which we should have, from which figure we subtract the number in bad order, those needing repairs, to give us 1,829,000. That allows a surplus of 50,000, which will give us 1,779,000 effective cars, so to speak, of the type and at the location where you want them. However, a more optimistic possibility would be to expand our freight car population by 15 percent, which would mean having approximately 2,100,000 cars. Taking out 5 percent of those in bad order would give us a freight-car population of approximately 1,949,000. But I am afraid we are not going to get that figure.

We are still on freight cars. This is just to give you an idea of the trend here. This program up here (indicating) we hope we are going to get started. This is the trend based on historical policy and need for requirements. Well, so much for railroads.

The next item on the program is the matter of motor trucks. They are the second important carrier. In the case of motor trucks, we have approximately 400,000 heavy over-the-road tractor and semitrailer, and tractor-trailer combinations. There are no figures showing the effective capacity of those trucks, or their age. We should therefore inquire of the people who will be with us in our seminars as to the ability of those trucks to do a wartime job.

Now, we have in this country about 200,000 route miles of important highways between cities; just about the same mileage as the route miles of the Class I railroads. Unfortunately, they are not being maintained in a condition which would enable first-class operation. The Bureau of Public Roads has estimated it will cost 9 billion dollars to put only the primary roads of the country in shape to carry a wartime load.

The reason for this tremendous deficit springs from two causes. The first is the heavy axle-loading of the freight carriers. The American Association of State Highway Officials is trying to keep that load down to 18,000 pounds per axle. That is the first reason—just the normal overloading. A second feature, however, is the fact that many trucks will wilfully and persistently overload. The figures show 5 percent. Somehow or other, those of us who travel from time to time along the highways get the idea that most of them are overloaded.

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Turning now to waterways we find there are two factors to investigate. The figures regarding capacity are not easy to ascertain. I think we ought to look into the matter further in our seminars.

Under waterways you have, first of all, the barges and tugs; second, the terminals. The waterways are not in themselves an important carrier by volume, but during the war they did an excellent job in carrying certain important commodities, especially petroleum. They also carried sugar, grain, and cotton. In a sense, the waterway carriers offer storage as well as transportation because commodities which are not needed at a certain time can be carried over a long period and stored on barges.

In the pipeline end, we have the two major carriers built during the war, the Big and Little Inch, now carrying as we all know natural gas instead of crude oil. The problem as regards the carriage of fuel is something which really is outside the province of transportation. I understand that it is possible to convert the pipelines from oil back to natural gas. We should take up with our petroleum people the question of what we are going to do about pipeline transportation of fuel oil since in the last war the tanker movement had been given, first of all, to the railroads—which proved quite a burden—and were only saved by the bell, namely, the building of the two pipelines.

The second principal area of our discussion here this morning is that regarding government relationships.

First of all, there is the matter of subsidies. The Federal Government has spent approximately a billion and a half dollars in getting the railroads started. Every time you have a new industry which is considered essential to our economy, the Government tries to help it along. Most of the Government's aid was not an outright gift; as a matter of fact, a very small part of it was. It has, of course, been paid back. So that the actual debt of the railroads to the Federal Government has been entirely paid off.

By the same token, the Federal Government has extended a great deal of aid to the highways. We have probably 50 billion dollars invested in our highways by public agencies of all types, local and state, the various authorities, as well as the Federal Government. The Federal Government alone has spent, I would say, about 6 billion dollars. That, of course, is a large sum of money. It is being spent at the rate of approximately 400 million dollars a year in grants to local states and authorities.

In the case of waterways, Federal aid has been about a billion and a half dollars. Approximately the sum of 100 million dollars is being spent annually to deepen channels and the like. I am sure these subsidies enable carriers other than the railroads to compete—and compete successfully—and offer transportation service at rates below which the railroads of the country cannot possibly go.

The second question of relationships to government covers the matter of actual regulation and control. Here, perhaps, I could get up an argument with you people during the question period. Everybody has told you, I am sure, that the situation during World War I, where the U. S. Railroad Administration took over the railroads was one of desperate failure. There are, however, a good many reasons to think that this is not true. I think it is important to bring out what the situation was in the last war as an indication of what happened in World War II because after all the type of control exercised by the Government in World War II was not nearly so different from that carried on in World War I as you might imagine.

First of all, the railroads under private ownership and management had fallen down on the job; that is what the ICC said in the spring of 1917. The operation of the railroads eventually became a national scandal. They were not placing cars for loading. Whole factories and towns were shut down because they could not get adequate freight car supplies. The cars, when they were moved, were not taken to their destinations promptly and the whole thing was a mess.

Now, there were several reasons for this; it was not entirely the fault of the railroad managers. You had to hire a great many unskilled laborers which ran the prices higher than had prevailed before. You had a labor shortage, which was aggravated, of course, by the demand for railroad-type labor in the war industries. So, you see, the railroads had to carry a tremendous World War I load with a rather inadequate labor force.

Second, the fact that the war industries were competing with the railroads for labor resulted in a dissatisfaction on the part of the railroad people because they were not receiving higher wages. Morale on the part of the railroad labor force was definitely low.

So when President Wilson gave the Nation a Christmas present of Federal ownership on 24 December 1917, it really began to look as though things were going to look up. First of all, the shortages of cars began to be diminished. There had been, previously, an overcrowding of the terminals. In February 1918, shortly after the roads were taken over, you had 200,000 excess cars in terminals. These were, however, reduced substantially by the end of the year. I have some figures here which I will quote later on. I do not think it is necessary to take up too much time for the figures. They did increase the train load, carrying 10 percent more traffic in 1917 and 1918. They did a good job of it, too.

Regarding the deficit, the ICC refused to grant a rate increase in 1916 because of a misunderstanding, in my opinion, of the whole theory of freight rates. They thought because the railroads were handling a large volume of traffic that it would make up for the unit losses. It's about as silly as the story they tell of a shopkeeper whom we shall call Mr. X. Mr. X was asked how come he was selling an article for 90 cents

that cost a collar. "Well," he said, "down the street, you know, one of my competitors is selling the same thing for \$1.15. Nobody goes in his shop; but look at the business I've got." In other words, he had volume on what he sold. That is what happened in 1917 and 1918.

The same mistake was made back in 1943 when the ICC allowed the OPA to talk it out of a rate increase. The OPA, it seems, also had ideas about controlling rates. As a result of their bucking any rate increase, over 100 motor carriers in the Nation went broke and had to be operated by the ODT.

I cite these because it is important to keep rates at a satisfactory level if you are going to get satisfactory service in return.

Turning now to World War II, this is a flow chart (not reproduced) prepared by the Office of Defense Transportation. It shows the capacity of the various ports in terms of cars and sailings. The significance of this chart is simply this: The ODT did an excellent job of trying to ascertain what the traffic problem was. One-half the secret of ODT's success was a scientific analysis of traffic problems. They had, as we shall see later from a diagram of the ODT organization, a Traffic Analysis Branch which made studies of railroad and other forms of traffic and tried to adapt the supply facilities to the known requirements.

Now, this is the chart of ODT (indicating). You will see that you have two types of divisions. The Staff Divisions advised the Director and included the Division of Traffic Movement. That was the board which made studies of traffic movement in the country and really, in my opinion, was responsible for a great deal of the success of ODT.

They also had these Carrier Divisions.

Over here (indicating) we had Railway Transport. The operation of the railroads during World War II was not under private operation, really. It was under government direction. The carriers cooperated wholeheartedly with the ODT. As a matter of fact, they wanted to. They had to do so because if they did not cooperate, the ODT would come in and say to them, "This is what has to be done. Let's get it done quickly."

The ICC has always been the agency vested with the power of directing car service. The Bureau of Car Service sees that shippers get cars. In order to avoid any trouble in that direction regarding authority, they arranged for the ODT to take over the car service function of the ICC and appointed the Director of the Bureau of Service as car service agent--and he did a good job. If he found, for instance, that gondola cars were in short supply in some localities he would see that they were shipped promptly to the places where they were needed. But he would also reroute whole trains in case of route congestion, regardless of the waybill instruction

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covering movement of those cars. He would direct the use of terminals, as needed. So that is not really, to my mind, private operation. If it is private operation, it is under complete government direction.

In the case of the Great Lakes operation, it is interesting to note that the ore boats oftentimes carry westbound coal. One of the functions of the ODT was that they would not take coal westbound if they did not have time to pick up the coal. They really got more out of the ore-carriers than ever has been achieved before.

Perhaps the most significant improvement in railway operation in World War II was the ruling-out of the giving of priorities. During World War I that got everybody tied up. They tell the story about the shipment of an anchor from Norfolk--I won't say which service was interested in this movement. The expediter came in to the yardmaster and said to him, "Now I would like to have this anchor given preferred movement." The yardmaster said, "Well, it's way down there on track 25 behind 50 other cars. I can't get that out without shutting down the entire yard."

The expediter proceeded to explain to him that there was a war on. After all, didn't he work for the Government? How about his spirit of patriotism? Finally, he succeeded in talking the yardmaster into getting the car out of the yard. As a consequence, he tied up the yard because he could only switch one car at a time. He had the yard pretty well tied up in no time at all.

When this was all taken care of, the expediter came into the office of his superior and said, "Well, I got the car moving. It should be in Philadelphia, just as you want me to have it there, in about 3 days." His superior wasn't pleased by this announcement. The chap turned to him and said, "Why what's the matter? I've practically moved heaven and earth to get the car out of the yard. I tied up the whole Norfolk yard for 2 days. I managed to get the anchor up here." His chief said, "Sure; but we haven't laid the keel yet."

That was typical. The entire Port of Philadelphia was tied up during World War I by shipments of Oregon fir and Washington pine destined for the slips of Hog Island which, as all of you know, was the big ship-building port in World War I, when, as a matter of fact, they hadn't even gotten the rails laid down to Hog Island from Philadelphia.

I was stationed for a while shortly after World War I in the Philadelphia area and on occasion had an opportunity to talk with some of the people in yard service. There were severe delays to the transfer crews engaged in inter-yard operation. The crew of one yard engine told me they had had the same thing during World War I. Over the old pot-belly stove they told stories to the effect that several times their engines and cabooses had not moved a foot in 8 hours, neither had the crew which preceded them, nor the crew which relieved them after their 8 hours of just standing still were ended.

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That, gentlemen, is the type of congestion which can occur if you do not schedule your production. Now that was not entirely the fault of the railroads. It resulted from the over-all war management in 1917 and 1918. So that brings up the whole matter of scheduling of production. The railroads, after all, are one of the tools of production. However, they cannot and should not be held responsible for crimes which they did not originate.

I think that pretty well covers the subject up to date. I will now try to answer your questions. But before you throw any questions to me, gentlemen, I want to point out that one of the reasons for success in World War II was the establishment of holding and reconsignment points. I suppose you are all familiar with that. They were storage facilities located a good day's journey back of the ports. During World War I some people had gotten into trouble because they had cars coming in with freight for which ships were not available. As a consequence there was considerable delay. The establishment of holding and reconsignment points was the real achievement of World War II.

QUESTION: I just want to know, in view of the greatly increased production in railroad cars, what this is going to do to the steel picture?

MR. HILL: Well, I am a transportation analyst, not a steel analyst. You will have to ask some of the people in the Production Branch just how it is going to fit in.

One answer, of course, is that the railroads have not been ordering cars in the volume which former ODT Commissioner Johnson recommended. His goal was set at 10,000 cars per month, or 120,000 a year. Only for a time--I think for one or two months--did they ever get up to 10,000 cars per month. However, they did get the steel for them. They did succeed in getting that much steel allocated.

So, you see, it is just the fact that the railroads are not quite willing to take the financial risk involved in a large car-building program. Perhaps I could explain that to you in this way: Freight car cost has gone up to about \$6,000 per unit. Back in 1940 the railroads were so afraid of government ownership of freight cars that NRPB suggested 500,000 a year as a figure to be shot at. That supply of cars would have cost approximately a billion and a half dollars at \$3,000 per car. The figure is now twice that in cost. The railroads are simply not willing to take on the responsibility. That is the other side of the coin.

COLONEL SIEVERS: In connection with this steel situation, this target of 10,000 cars per month they are shooting at now, I might add there has been an allocation made of 310,000 tons of steel per month. It is thought there is sufficient steel on hand to meet this target of 10,000 cars a month that started 1 January 1951.

QUESTION: I was somewhat amazed at your statement that they were scrapping 90,000 cars a year. I was wondering if that was really necessary. Couldn't some of these cars be repaired, patched up, or are they in an unserviceable condition?

MR. HILL: They are unserviceable, sir. Over 35 percent of the cars are over 25 years of age. In other words, the depreciation as calculated by the ICC is at about 4 percent per year. The ICC engineers guess--and when I say "guess," that is exactly what they do--that the life of a freight car is about 25 years. Over one-third of the freight cars in the country are overage--the age at which the ICC says they ought to be all washed up.

QUESTION: Regarding the Big and Little Inch pipelines, wouldn't there be any advantage in putting that back into petroleum service, since you may change the requirements of the user from gas to oil?

MR. HILL: I just don't know.

QUESTIONER: One of the articles we had to read on this subject pointed out the fact that because such a large segment of industry in the East had become dependent on natural gas it would be impossible to try to get all these companies to convert over to using petroleum. In other words, they are forever lost to petroleum.

MR. HILL: I think you are right. As a matter of fact, we do not care whether the fuel is natural gas or oil so long as we get it. The natural gas supply seems to be quite adequate. It is perhaps the domestic user who is committed to the consumption of oil who is going to be hurt if he doesn't get his supply. In World War II you had the possibility of cutting down all fuel oil shipments to industry and giving it to the domestic consumer. Well, you cannot do that with natural gas if the whole area is using oil.

QUESTION: In the case of commercial shipping, the Government builds and ties up ships in order to meet a great emergency. What consideration has been given to doing the same thing with freight cars?

MR. HILL: I had the pleasure of going to a meeting of the Washington Society of Engineers, at which a really imposing panel of transportation people were on hand, headed by our own General Fleming. Also present were the CAB Chairman, CAA Administrator, Highway Commissioner, and most important, the Director of Information of DTA. In the course of the discussion it was brought out that up to date there has been no necessity for the allocation of freight cars. In a private talk following the meeting, the gentleman in question said he had told the shippers if they had any need for freight cars, he would see that they got them.

QUESTIONER: That was not my question. My point is this: In the case of commercial shipping, the Government builds at government expense

sufficient ships to meet any war emergency that comes up. We have them tied up in between wars. It is a heavily subsidized government operation.

MR. HILL: This is overseas shipping you are referring to?

QUESTIONER: Yes. Has any consideration been given to applying the same principle to freight cars? In other words, having the Government build and lay aside as a war reserve the freight cars that are required but which will not be built because it is not profitable enough to the railroads to build them?

MR. HILL: Your question is: Are we going to build freight cars as we build ships--

QUESTIONER: And put them in a moth-balled fleet.

MR. HILL: That was an idea which the NRPB had in 1940. They were going to do just that. There are many people who say that it should be done the same way by the Government--the RFC, for instance, if we can trust the RFC to do a good job. They would presumably finance the construction of a large fleet of freight cars and make them available on a when-needed basis. That is exactly what is in mind.

By the way, in speaking of shipping, I should have mentioned in my lecture that we started in the war with about 5,000 vessels of all types. We have approximately 2,200 still in moth balls. However, the Maritime Administration feels that three-fourths of those moth-balled boats ought to be replaced by new military type vessels with greater speed. The old boats won't go fast enough to outrun submarines. They want faster military type ships.

COMMENT: With reference to the freight-car construction program, it is my understanding that they are attaining about 7,000 cars per month production now. The reason they are not attaining the 10,000-car level which they are trying for is that the mill schedules have not been set up. After all, this is a new program and the old schedules have not been changed, the ore schedules have not been set up and are not sufficiently well advanced to turn out the type steel required for that program. That appears to be the principal delaying factor in the program right now.

MR. HILL: Thank you. I am glad to have your comment. However, I would like to point out this: The matter of freight car supply has been the No. 1 problem on the lips of everybody in the transportation business. Ever since the war, the carriers of the country have been urged to build more cars. They did reach a peak of 10,000 cars, I think, in 1948. However, when there was a decline in business there was also a falling off in steel. So that I just offer as a possibility the disinclination of railway managements to order freight cars. I think probably that is the answer to the problem.

QUESTION: Sir, there is one thing which, it seems to me, has deterred the progress of the railroad system over the past two decades and that is the attitude of labor. I cite as examples their attitude toward pallet-feeding of LCL shipments; the lack of incentive rates for the return of pallets to their point of origin. It is things of that nature that, to me, would be a definite deterrent to the railroads of the country rendering the kind of service the trucking companies do.

I wonder if you could possibly enlighten us any on that?

MR. HILL: As I gather it, your thought is that the railroad management has not been as alert as it should have been.

QUESTIONER: That's right.

MR. HILL: That is always a question which we should investigate. The railroads now are trying new types of sectionalized boxcars. There is always this matter of the consignees' return of pallets which constitutes a definite problem. You have the same thing in connection with certain types of freight car doors, for instance, that are detachable and which could be returned inside the car; but they never seem to get them back.

I think it is entirely possible that management has not been "up to snuff" on that. We should investigate it further with the people who come down to our seminars.

QUESTION: I just wanted to go a little further into your answer to my first question. You mentioned that in view of the cost of these cars railroad management was loath to go into it too far.

MR. HILL: That's right.

QUESTIONER: Last year in one of the news magazines I read an article which indicated that some of the large insurance companies were going into the business of having these cars built and then leasing them to the railroads. That should have become quite a factor by now.

I wonder if you would please comment on that.

MR. HILL: Yes. That is very interesting.

The Equitable Life Assurance Society has this new plan by which the railroad does not put down any money. By the way, you probably are not all familiar with the old plan which puts down 20 percent of the cost of the cars, so that a car costing \$5,000 means an actual cash outlay on the part of the railroad of \$1,000. That \$1,000 is, of course, taken out of the picture entirely by the Equitable plan and the railroad puts down no money. But, of course, they are liable for the payment of those cars on

a lease basis. So that while there is no cash outlay required, as you would do yourself if you bought a TV set, they buy on time and make the regular monthly payments.

Apparently they feel they don't need those cars right now. That is the reason. The President of a railroad cannot recommend to his board to buy cars if they are not needed in the immediate future. It is the old conflict between a perfectly sound private interest on the one hand, on the part of the railways, and on the other a situation where the national interest should be considered by someone.

QUESTION: What about passenger cars? In the old days, we used to put 6 soldiers in a section. Nowadays you have these roomettes, bedrooms. It is rather difficult to get 3 soldiers in a roomette. Aren't we going to be short of those come full mobilization? Aren't we going to be short of passenger-car equipment?

MR HILL: Yes, sir; that is quite true. Of course, the answer is that if we need more cars with more carrying capacity, we will simply have to take them back to the shop and put back the old sections. That is the only answer to the problem.

COMMENT: Mr. Hill, you have presented the official ICC point of view on the shortage of freight cars in this country. Without attempting to minimize the importance of building more freight cars, I would like to present a number of points for your consideration as to whether as a matter of fact the shortage is as great as most of the figures you presented seem to indicate.

In the first place, the ICC continually figures freight cars in units. In other words, they say a certain number of freight cars were built last year, so many new cars were produced, therefore we have a net deficit or a net gain of so many units of freight cars. As a matter of fact, however, the freight cars becoming antiquated or being broken up have about one-half the capacity of the new freight cars that are coming into production. If they would put their figures in terms of capacity, they might get a slightly different estimate of the picture.

In the second place, with the greater use of Diesels, you have a remarkable reduction in the turnround time. So that with the same number of freight cars you can move much more tonnage than you can by using steam locomotives, where the trip takes much longer.

In the third place, in a time of shortage, such as a war situation, the ODT, and presumably any agency which does the same job in another war, finds it very convenient to insist on a higher load per freight car. By reduction of LCL shipments, by insisting that the freight cars load at a much higher capacity, they find they can increase the capacity of their transport system in that way.

Now, if the ICC would reorganize its statistics in accordance with 1951 standards instead of using 1913 standards, they might find that the picture is not quite so bad as it seems.

MR. HILL: Thank you, sir, for your comment.

Well, No. 1, this matter of increased capacity. I would like to differ with you, if I may, on capacity difference. I think you will not find any boxcar now operating which is much less than 100,000 pounds. You will find a few, not very many. The new cars are being made with practically the same tonnage capacity. They make them somewhat larger to carry somewhat greater loads, but not very much. The same thing is true of the open-top equipment. To a certain extent, what you say is correct, but not quite to the ratio of from one to two.

Now, No. 2--the matter of Diesel locomotive substitution for steam. On that point I would again like to differ with you, if I may, for this reason: The actual time spent by a railroad freight car in movement is approximately three hours per day--I think it is something like that--on the average. So that, although there has been a slight speed-up in movement as a result of the change from steam to Diesel, there has not been any speed-up or change which would indicate that the efficiency of the freight car has been materially increased.

You have to remember that it is not only the loaded time that has to be considered. It is the entire turnround time. The important thing is to get the shippers to load on a six-day-week basis, or even a seven-day week if you can possibly get them to do that. In other words, it is the whole movement--getting the car loaded properly and then promptly out into the yard--that is so important. The ODT had to increase loading per car or else the country would have been in bad shape. We must have a surplus of about 50,000 cars. If we had not had very careful supervision of turnround and routing, we would certainly have been in very bad shape.

QUESTION: Mr. Hill, I am somewhat interested in your bar chart where you showed the percentage of freight moved by water. My question is more or less this: Does this bar, to a larger extent, represent ton-miles or tons?

MR. HILL: Ton-miles. The freight performance, of course, is based on ton-miles rather than on tons.

QUESTIONER: But we could convert it back to tons?

MR. HILL: I would say that, first of all, the average railroad haul is about 400 miles. Now the truck, which is your next most important carrier, has a rather shorter haul. With the truck I would say the average haul intercity would run approximately 250 miles.

The waterways have a very long haul. About 3 percent of the total is inland waterways. As I mentioned earlier, we have a problem in connection with the carriers on the Great Lakes of moving them down from the head of the lakes down to the eastern lake ports. Of course, those carriers and boats are owned by the steel companies and in the case of the inland waterways we have private operators. The barge lines have very long hauls and carry high tonnages per haul.

QUESTION: Has any consideration been given by the trucking industry to building more trailers? In their present operation they contribute very little to bulk export operations simply because they have to tie up the entire prime mover and the trailer at the same time. If they could have, say, 50,000 excess trailers on hand, we might get more use out of the trucking business.

I wonder, would you please comment on that?

MR. HILL: Sir, I do not know what the answer is. I think we ought to take that up with the people when they come down to the seminar on Friday. There are no figures available to show what is going on and I cannot tell you. Perhaps our guests may know from their own contacts.

QUESTION: Getting back to your point about the three-hour-a-day operation of the average freight car, I would like your comments on yard operation. It has always seemed to me that the railroads in the management of their yards were most inefficient.

As an example, take the yards out around St. Louis, which are certainly extremely important. When a freight pulls in there, it never comes on into the yard. It is always dropped off way out in the wilderness. The switch engine eventually pulls into the yard where it just sits. There is normally a two-to-three-day delay in getting the freight from East St. Louis into St. Louis, just for that little distance. The same thing happens in Indianapolis, Chicago, and most of our other big rail centers.

Now, isn't there any thought being given to speeding up this tremendously slow process of getting the average freight through the average yard?

MR. HILL: Yes. That is a matter of progressive accomplishment, I would think. In the old days, of course, you had one classification for all the cars which were going west. There was one train and out that went.

Now, of course, this is not something entirely new. They have what is called "prior classification," which means that a train will set out from New Jersey and go right into Englewood or Garfield Boulevard in Chicago with perhaps only one stop to pick up or set off cars.

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And the same thing is also true on interyard movement. In other words, you have always had an attempt on the part of the terminal managers to see that cars were taken in as large groups as possible from yard A to yard B. I am not familiar with the details of the operation which you described; however, it is entirely possible that over a period of time they can improve the operation there and possibly cut it down somewhat.

But these big terminals are quite a problem. For instance, a car coming into Chicago on the Pennsylvania on lines east of Pittsburgh would probably come into Garfield Boulevard--that is, on the old Fort Wayne Division--and if the car were going to a point on the Logansport Division it would be transferred from Garfield Boulevard over to the Fifty-ninth Street yard, I think it is called. For a complete operation this would mean a good deal of delay. Unless there is a large number of cars, they do have to be switched a good many times.

QUESTION: I notice you said that as a result of the evolution of the holding and reconsignment points, the jamming up of traffic at ports was lessened. We had exactly the same thing in World War I and it wasn't always because the stuff piled up at the ports, either. In World War II, as an illustration, we had cars backed up 200 miles in San Francisco. We had to go back and have new material manufactured and flown out to us because we could not get it out in freight cars. That was in 1944 and early 1945. Why is San Francisco different from all the rest of the country?

MR. HILL: I know at Stockton they had that holding and reconsignment point. But I will be glad to have some reenforcement from someone in the Transportation Corps if I can get it on that. The operation of those holding and reconsignment points worked pretty smoothly.

QUESTION: It was only in the middle of 1944 that the Navy was required to release its traffic to the ports. Prior to that time the Navy's traffic was all released on bulk allocation. All the Army's traffic was released by individual ODT unit permit. The Navy was not, until the middle of 1944 and the reason it was subsequently put into that system was because of that big jam-up in San Francisco.

I recall reading somewhere in the past there were several bottlenecks in traffic, particularly on the Southern Pacific. I wonder if any consideration has been given to eliminating some of the bottlenecks, especially over single-track routes?

MR. HILL: That is a question which I would like for you to refer to the seminar panel members. We are going to have with us on Friday a man who knows much more than I do about that. However, I would like to offer a few comments which may guide you and help you in posing your questions to him.

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No. 1: In the early months following Pearl Harbor you had a tremendous amount of traffic on the SP. The line was terribly crowded with traffic. The line running between Seattle, Portland, San Francisco, and Los Angeles was just packed with cars.

No. 2: The SP was also handicapped in its east-west movements through Ogden because of the fact that the railroads have always been designed for a west to east movement.

As I pointed out before, one reason why we can expect better performance on the railroads is because they are doing a really grand job of equipping their tracks with the new signal devices, especially CTC. The Diesel locomotives will also help to speed up the flow of traffic.

QUESTION: To me, you have painted a rather dark picture. From the viewpoint of your study of railroad financing the railroads cannot operate satisfactorily without the freight cars. You indicated that they are now salvaging cars. Obviously, they are in a downward spiral which will theoretically end at zero. At the same time, insurance companies are willing to take the financial risk involved, which would indicate to me a decadence in the management of the companies.

With that picture in mind, what is the future of the railroads? Is it insurance-company ownership, government ownership, or what?

MR. HILL: Well, heaven help us if we have government ownership of railroads. I hope not.

The answer is clear and simple: The railway managers are, as I have said, not too happy about the prospects of buying a lot of expensive cars when they are not sure the traffic is going to come to them. It was the highway truck, you know, which took over most of the boxcar traffic as well as the high-rated traffic. They are not common carriers. In other words, they will not take any and everything you want to ship. As a private citizen, you have to get down on your knees to the truckers of the country if you want to get them to take your household goods some place, for instance. The railroads, on the other hand, will gladly take them. As a matter of fact, they have to take them.

The National Distillers Institute, I think, put out an exhibit which showed that the railroads were carrying the bulk commodities--the coal, the lumber, building materials, all kinds of fuel, the barrels, crates and pulpboard--but the trucks came up to the back door and took out the liquor, which, of course, carried a very fine rate.

The life insurance companies have tried to make the way easier--that is, Equitable has been the one to do it. They have tried to cut down the cash payments. A 20 percent cash payment is not a big item for most railroads. But, you see, they do not want to be caught with a lot of cars they are not going to use. That is the real answer.

QUESTION: Has any thought been given to pooling and a joint utilization of boxcars as the airlines have done with their aircraft? For example, Eastern Airlines and Northwest have pooled their aircraft to take care of peak periods, Northwest in the summer and Eastern in the winter.

MR. HILL: Well, sir, that is a very good question. The answer is this: Under the car service rules of the Association of American Railroads--that is, as you all know, the club of the railroad people--when I say "club," I don't mean a stick--the cars are really pooled. For instance, if you need a lot of boxcars in the Northwest, say, the AAR will ask the eastern carriers to send them out. And they will do it if they have a surplus. Now, of course, that also results in no shipments being made, if there is not a surplus, on lines which are being asked to send cars to other areas. Perhaps the eastern carriers are expecting loadings which may not materialize; but they certainly are not going to send a lot of cars to the Northwest if it should mean by their so doing they are going to be short themselves. During World War II, ODT ran most of the railways as one transcontinental unit; this meant not only cars but also locomotives.

QUESTION: From what you have said I gather that the greater part of the time is lost in loading and unloading the freight cars rather than in actual transportation time.

MR. HILL: That's right.

QUESTIONER: Has there been any thought given to developing a chassis for the freight car with more or less detachable parts that you can put off a loading platform, have the cars loaded, picked up and put back on the chassis?

MR. HILL: The nearest thing to that is in connection with containers. Back in 1935 they were first tried out. The containers are still used to a limited degree, especially with LCL shipments of certain loads.

Now, these containers are big boxes carrying, say, 5 tons. They are loaded in gondola cars, or sometimes flat cars. They are, of course, unloaded from the cars by means of a crane. As a matter of fact, they cannot be unloaded, in most cases, except by crane; although there are attempts now being made to have containers which can be taken off gondola cars or flat cars by two men without any mechanical assistance. That is the nearest thing they have come to on that.

QUESTION: I understand the St. Lawrence Waterway project has been under negotiation for some 30 years. What is your opinion as to the need for its completion at this time?

MR. HILL: There is no need in the sense of our being short of transportation requirements for this country. If we have a development of iron ore resources up in Labrador, which apparently is going to be undertaken, then I would think that would be a point. Meantime, the railroads--and with some reason--are saying, "Well now, here we have invested a lot of money in railway carrying capacity. We are going to spend more money than it will take to put a double-track railroad alongside it just for the sake of having a deep channel."

There is no need right now, I would say, for the St. Lawrence Waterway, although that is a matter for considerable difference of opinion. I wish you would take it up with the seminar panel members when they come down here.

Thank you very much, gentlemen.

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THE INCODEL PROJECT

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Mr. James H. Allen, Executive Secretary of the Interstate Commission on the Delaware River Basin, was born in 1899. He was graduated from Massachusetts Institute of Technology. Prior to 1937 he was associated with Morris Knowles, Inc., Consulting Engineers, in Pittsburgh, and was a member of the staff of the National Planning Board. He is a specialist in municipal water supply and sewage collection and treatment problems. He is a member of the American Society of Civil Engineers and the American Water Works Association and has been Secretary of the National Water Conservation Conference since its formation in 1944. For the past 12 years he has been, respectively, Engineer and Executive Secretary of the Interstate Commission on the Delaware River Basin.

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THE INCODEL PROJECT

8 March 1951

COLONEL ENNIS: Gentlemen, we have had one lecture this week on water—by Mr. Requardt and he pointed out its importance. If you will remember, in that talk he touched on the subject of pollution of our streams. I have a paragraph taken from the report of the President's Water Resources Policy Commission on the subject of stream pollution which I would like to read. The statements in this paragraph are based on a public health survey of 11 major river basins:

"Pollution is a factor that already affects or will eventually affect all water resources development, whether it be for flood control, irrigation, hydroelectric power, municipal and industrial use, or recreation. Four of the river basins—the Connecticut, Delaware, Potomac, and Ohio—have 4,722 cities and factories—more than 67 percent of the total in the 11 basins studied—and nearly two thirds of these eastern cities and factories discharge their wastes wholly untreated."

The Interstate Commission on the Delaware River Basin is fully cognizant of everything that has been said in that report. We are fortunate this morning in having Mr. James H. Allen, who is the Executive Secretary of the Interstate Commission on the Delaware River Basin, to describe to us what the Commission hopes to do and intends to do to make the Delaware River a greater economic asset. Mr. Allen.

MR. ALLEN: Colonel Ennis and gentlemen: In starting this discussion of the program and activities of the Interstate Commission on the Delaware River Basin I think I should perhaps make an effort to get us on a common ground of approach.

You here are military men, or civilians directly connected with the military service, whose principal mission in life is to defend the rights of this country, and other countries of the world, to live in freedom. I am a civilian. The program and the activity which I shall discuss this morning were designed for civilian peacetime needs; and, until Colonel Ennis invited me to come down here today, I must admit that I hardly appreciated the significance of our project militarywise. I now realize, however, that it is a very important undertaking from a military aspect, because the things that we do will help to produce more efficiently the materials that are needed for military purposes. Moreover, we feel that our program is backed by a fundamental philosophy which builds a better spirit and a better type of self-government.

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With that as an introduction, I would first like to tell you when the Interstate Commission on the Delaware River Basin--which incidentally, I will call from now on by its abbreviated name INCODEL--was created and why.

The Commission was created in 1936 by the states of New York, New Jersey, Pennsylvania, and Delaware for the primary purpose of formulating programs for the wise utilization, control, and conservation of the natural resources of the Delaware River.

The first and obvious reason why the states took this step was because the Delaware River flows through each of the states, and the watershed from which the Delaware gets its stream flow is located in parts of each of those four states.

The second and corollary reason was because about that time there began to be a general public awakening to the need of planning for the wise development of the natural resources of the country. Three years before INCODEL was created, the late President Franklin Roosevelt, in advocating that jobs of this kind should be handled by a federally controlled agency in the case of the Tennessee Valley, said, "If we are successful here, we can march on step by step in the like development of other great river basins of the country." Representatives of the state governments in New York, New Jersey, Pennsylvania, and Delaware agreed that these jobs must be done, but disagreed with the philosophy that they should be done by a federally controlled agency. They felt, and still believe, that the task should rest with, and be assumed by, the states in which the particular watershed to be developed is located. They believe that the principles of self-government are better enhanced by that procedure.

As an organization INCODEL is composed of five representatives from each of the four participating states. Of each group of five, one is a state senator, one a member of the state House of Representatives, one a member of the governor's official family, one a member of the state's planning board, and one a representative at large.

The Commission's powers are purely advisory. The programs which it formulates must be referred to the respective states for approval, adoption, and administration.

The Commission's initial objective when it was created in 1936 was to develop a program for coping with the problem of stream pollution. This effort was quickly and successfully culminated. I won't attempt to go into all the details as to how the problem was approached but will simply give you some of the high lights. The first step was to call the chief engineers of the four state departments of health into conference and to ask those engineers to take down their hair, lay their cards on the table, and say why the problem had not been properly handled in the past.

Two of the major reasons that it had not been handled properly were: first, because, although each state had laws on its statute books, not one of these states would make a move until its sister states had taken the first step. Obviously, an approach of this kind is doomed to fail.

We continued with the conferences of the chief engineers; and within the course of about two years--the conferences were held on the average of once a month or once every six weeks--they came forth with recommendations under which the Delaware River was divided into four zones, starting from the headwaters and proceeding to the bay. They proposed standards for the treatment of municipal sewage and industrial wastes which were appropriate for each of these zones.

This program was incorporated into legislation; the legislation was presented to, and has been adopted by, the four states. As a result of this approach, there is now under construction on the Delaware River a program for dealing with municipal sewage and industrial wastes involving the expenditure of well over 100 million dollars.

The project for the restoration of the Schuylkill River, which was described in an article in the "Saturday Evening Post," I believe, in the July 1949 edition, was formulated by INCODEL, and in this case first presented to the Pennsylvania Legislature where it was promptly adopted. INCODEL then called on the Army engineers to review a study which they had made of the Schuylkill River resulting in the conclusion that there was no justification for Federal participation. Upon making the review, and in view of the fact that the program had been outlined in a comprehensive manner, the Army engineers this time found a basis for Federal participation.

Now I come to the truly great project which INCODEL has recently developed and is presently asking the legislatures of New York, New Jersey, Pennsylvania, and Delaware to approve, adopt, and execute. The best way to give you a clear understanding of what that project is and what it is designed to accomplish is to show you a movie which has been produced to do these things.

Before putting it on the screen, I want to make a brief but significant observation. It is this: The project has been designed to meet the needs for water supply, both municipal and industrial, of a region which commercially and industrially outranks any comparable area in the world. That region includes New York City, a great metropolitan area adjacent to New York City in northwestern New Jersey, and the city of Philadelphia.

The future of this country, in both peace and war, depends to a great extent upon the welfare and prosperity of this region. This region cannot thrive without an adequate source of good water. That is the basic purpose of the project, as you will see on the screen, and which I will

further describe after the picture. With an assured adequate source of good water, the industries and the people of the region served will continue to produce to defend and protect the rights of this country.

(Motion Picture of a 12-minute duration)

As I pointed out in my previous remarks, this project is primarily a project to provide additional sources of water supply to areas of need in the region that can be logically served by the Delaware River Basin project. I know each one of you realizes that one of those areas of need is New York City. During the 1949 drought, the dire situation which that city found itself in was well-publicized. But actually there is a greater need for additional sources of water supply in northeastern New Jersey, because New York City is really not so badly off as most people might think. It is true that they were hard hit in 1949 when demands for water exceeded the present capacity of their existing sources of water supply. But New York City now has under construction, and has had under construction for the past several years, a project which will bring an additional supply of water into New York City in the amount of about 540 million gallons of water a day. Of that amount about 440 million gallons will come from reservoirs on tributaries of the Delaware River in New York State. This particular project was originally proposed back in 1929; and when first advanced, New Jersey sought to enjoin New York from proceeding with this project. The controversy was heard by the Supreme Court of the United States. The Supreme Court validated New York's claim to a reasonable development and diversion of the waters of the Delaware River. I give you that as background to the statement which I just made that the need of northeastern New Jersey is much more acute than that of New York City, because, contrary to the situation in New York City, New Jersey has no project under construction or in prospect; they are placing sole reliance upon the proposed INCODEL water project.

Philadelphia gets its water directly from the Delaware River and the Schuylkill River at its front door. So far as quantity goes, this source is inexhaustible; but the quality is anything but good. Philadelphia has been talking for perhaps half a century of abandoning its present sources in the polluted sections of the Delaware and Schuylkill Rivers and going up to the uplands. Philadelphia also would participate in the INCODEL project.

Now, there is another major purpose of the project. It is to impound a sufficient volume of water in this system of reservoirs to permit the release of water in times of summer drought, when the flows in the lower Delaware River are so low as to cause a serious threat to industry. There have been years in the past when industries, particularly in the tidal section of the Delaware River below Philadelphia and especially in the Chester area, have been forced to haul water from inland regions in order to keep going.

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That problem is brought about because these industries get their water directly from the tidal section of the Delaware River where, in ordinary times, there is fresh water. But, when the flow from the up-land part of the basin becomes so low, the force of that fresh water is not sufficient to hold back progressive upstream movement of salt water from the ocean caused by tides. These incursions of salt water occur almost every summer and they are very pronounced during a period of drought. At such a time, industries have a real task and have to go to tremendous expense in order to properly treat their water so it can be used.

That leads me to tell you about the cost of this project and how it is proposed that it shall be carried out. The estimated cost of this project is between 500 and 600 million dollars. Of that cost approximately 80 percent is properly chargeable to the purpose of providing water supply. That 80 percent of the total cost, say in round figures, 400 million dollars, will be entirely self-liquidating by revenues received from the sale of water from the project for water-supply purposes. The balance of the cost of the project, again in a rough figure about 150 million dollars, will have to be borne by the states in proportions representing the benefits which they receive from the stream-flow regulation features of the project.

It is proposed that the project be carried out by an administrative agency to be created by the four states under the terms of an interstate compact. Legislation setting forth the terms of that compact has been introduced in all four of the state legislatures. The agency would be in the nature of a water "authority." We prefer to call it the "Delaware River Basin Water Commission." The commission would be empowered by the terms of the compact to raise its own funds and to issue its own bonds for the financing, construction, maintenance, and operation of the project.

The project is a vital necessity to the region which the Delaware River Basin serves. We are convinced that it will be carried out, because it is a vital public necessity. We are hopeful that the states will face their responsibility and decide to carry it out under the procedure which INCODEL is recommending. But we are well aware of the fact that, if the states fail to recognize their responsibility to execute the project, it will probably be carried out by some agency of the Federal Government.

Colonel Ennis in his introduction referred to the report of the President's Water Resources Policy Commission. That report dealt with all phases of the development of the river basin. That report recommends that these problems of development of the water resources of river basins should be handled by agencies created by the Congress and composed entirely of Federal representatives. We of INCODEL think that this procedure is far less desirable than having the states and local governments do the job themselves.

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I want to call your attention to the fact that we have a map here which shows this project. (Map was not reproduced.) This is the Cannonsville Reservoir up here. Incidentally, I should say first that New York State is shown in tints of green, Pennsylvania in pink, and New Jersey in yellow. The darker tints are the parts of the states where the project is located. The Cannonsville Reservoir is located entirely in the state of New York. The second reservoir, at Barryville, is purely a diversion reservoir to hold back the flood waters long enough to transport them into this tremendous reservoir here. It straddles the Delaware River between New York and Pennsylvania. The third reservoir, known as Godsffroy, is also located entirely in the state of New York. The fourth reservoir, Wallpack Bend, straddles the river between Pennsylvania and New Jersey.

This project is designed to take care of the water supply needs of these metropolitan areas for about 40 years in the future. The project, however, can be expanded by the construction of additional reservoirs whenever needed. By the expansion of the project, the water supply needs can be taken care of well into the next century.

This map shows the actual flow in the Delaware River at Trenton during the worst consecutive twelve-month period—from April 1930 to March 1931. Of course you get the highest flow in the spring. The months of July and August and up through November are usually the critical months. When the flow gets down below 3,000 million gallons a day, industries are hard hit. When the project is in operation, if a period such as the dry period of 1930-1931 should recur in the future, it would raise the flow from an average of 2,700 cubic feet per second to 4,800 cubic feet per second.

QUESTION: Is the generation of electric power contemplated; and, if so, what are the revenue possibilities?

MR. ALLEN: The generation of electric power is contemplated, but it would be very incidental and almost insignificant. It is impossible to utilize this project for the production of a substantial amount of electric power and at the same time meet the primary and superior needs of water supply. However, we are providing for power installations to utilize the dependable flow out of the reservoirs, being that flow which you can depend upon for 24 hours a day, 365 days a year. It is estimated that the value of that power will be approximately one million dollars per year.

QUESTION: I read somewhere that God made the Delaware River beautiful, but man has turned it into a sewer. You mentioned control of the river, but does the INCODEL plan also include sewage treatment plants and that sort of thing to keep the water pure?

MR. ALLEN: Yes. I deliberately concentrated my discussion this morning upon this water supply project, but I would recall to your mind that I said that INCODEL's initial objective was to find a way to cope with the problem of stream pollution. That is what started it off. That was the first task that it undertook when it was created in 1936. Within a period of two years, by 1939, it had formulated a unified program for dealing with stream pollution and that program had been enacted into law in New York and New Jersey and had been adopted by administrative agencies of Pennsylvania and Delaware as the guiding policy in handling stream pollution.

Now, as a result of INCODEL's activities in stream pollution, there is under way in this Delaware River Basin a construction project that exceeds anything else in the country. For example, the city of Philadelphia is currently engaged in the construction of a project to handle its municipal sewage and such industrial wastes which will cost about 70 million dollars. Across the river, the city of Camden is also engaged in the construction of a municipal stream-pollution-abatement program costing about 15 million dollars. Throughout the entire length and breadth of the basin there are works under construction to deal with this pollution problem. Means are well on the way to make the Delaware River, which man spoiled, beautiful again. Man is now beginning to restore it. We believe that by 1955 all unwarranted stream pollution will have been stopped.

QUESTION: What particular problems do you think you will run into because of the destruction of farm lands or industrial areas through the building of these reservoirs?

MR. ALLEN: That will be a relatively easy problem, because areas which will be flooded are predominantly rural. There is hardly any industry that would be displaced by reason of the construction of reservoirs. There is considerable rural and dairy land there, but no industry to amount to anything.

The Delaware River above Trenton is primarily a recreational area. The industrial plants on the Delaware River are concentrated in the area below Trenton, particularly from Trenton down to the Pennsylvania-Delaware boundary line.

There are other industrial areas in the Delaware River watershed, but they are not along the main river. The Schuylkill River is heavily industrialized. The Lehigh River, particularly at Allentown and Bethlehem, is also heavily industrialized. But the upper Delaware basin, where the project will be located, is primarily a recreational area, utilized mostly for recreation and agriculture.

QUESTION: There is considerable industrial development around Wilmington, Delaware, and Newark, Delaware. Will they get any water from this project from that which goes into these reservoirs?

MR. ALLEN: Delaware will be benefited by this project by reason of the stream-flow regulation feature. When this project is in operation, there will be a guaranteed flow of water from the upper basin down to Trenton which will be 100 percent greater than what now occurs under existing conditions. That additional water into this tidal section will be of benefit to Delaware. But its primary benefit will be in the protection of its oyster beds. It will not be beneficial to Delaware so far as industry is concerned, because it is impossible to hold down the salinity in the river below Wilmington.

QUESTION: What benefits will the state of Delaware get from this project?

MR. ALLEN: We do not anticipate that the state of Delaware or the municipalities or industries in Delaware would need or could justify the use of water from this project for water-supply purposes. We believe that they can get it more economically from sources close at hand. But if there is a need, this project can provide water for the city of Wilmington.

QUESTION: I would like to ask two questions. Number one, you talked about an allowable pollution of the streams, or I think you said "justifiable." I would like to know what that means. Second, what is the main problem in Philadelphia taking water directly out of the river, what type of impurity or pollution causes the greatest difficulty in treatment? Is it industrial wastes or is it sewage pollution?

MR. ALLEN: To the first question I cannot give an exact answer. We are asking the municipalities and industries in all sections of the basin to remove at least 75 percent of the material that causes pollution.

Now, to get back to this term "justifiable," as I pointed out just a moment ago, the section of the river between Trenton and the Pennsylvania-Delaware boundary line should primarily and logically be used for industry. Philadelphia has been fortunate in being able to take its water from this section of the river which should be used primarily for industry. But the construction of a new U. S. Steel plant has just been started at Morrisville which is across the river from Trenton. There are several other new steel industries locating in this section. There is no question in the minds of those who have studied the problem that these large industries are going to cause many allied industries to locate in this area.

Now, obviously industry has a responsibility for dealing with its industrial wastes. But you cannot expect industry to do a 100 percent job and return the water in its pristine purity. If the concentration of industry gets so great--you can't press too far; what I am leading up to is this: We believe that it would be asking too much to require industry to expend the amount of money necessary for the treatment of

wastes to such an extent as to permit Philadelphia to continue to take water from the river. It would put the industrialists out of business. Therefore we are convinced that the most economical thing to do is for Philadelphia to get a new source of water supply.

In answer to your second question, the main problem is industrial wastes, like phenol and other chemicals. They had a situation there where there was some pollution incidental to industrial use back a few years ago which almost ruined the water supply for about two weeks. The municipal sewage is not a difficult problem to cope with.

There is a strong feeling on the part of the people in the lower part of the area that New York City in its consumption of water from the Delaware River will rob the lower riparian owners of their rights to water of the Delaware River. That is not true at all, because the whole program is hinged upon capturing and storing flood waters at flood peaks, putting them in storage and saving them, so that they can be used when a summer drought occurs, to add water to the river. So this project is a definitely beneficial one to the lower river. It is as beneficial to the lower river as it is to New York City.

QUESTION: The subject of artificial means of rain making came up in connection with another lecture. Have any agreements been reached between the different states so that New York State won't be robbing the others, or anything like that?

MR. ALLEN: New York City had engaged a rain maker. He was operating in the Catskill region for approximately a year. There was considerable rainfall while he was engaged, but I believe no one gives the rain maker much credit for making that rainfall. He is no longer engaged by the city.

It is a known fact that you probably can produce rain if you have something to work on. But you must have a cloud to work upon; no rain maker can produce rain without some clouds. Moreover, it is very doubtful whether, even if he has clouds to work upon, he can make the rain fall in the right places. We don't place confidence in the ability of rain makers to produce water at the right time in the right place.

QUESTION: There are about 20 million people living in the areas embraced in this project. How do you go about getting them together in making these decisions to approve these projects?

MR. ALLEN: Right at the moment that is a job that has me worn down. We have been very fortunate in having as our 20 members (five from each state) high-caliber representatives of state governments. It is obvious to them, as it is obvious to everyone here, that it is a most difficult job to get even five members from one state to be completely in accord on a project. There is no set formula but the answer is to just work on them constantly from all sources, and if you are persistent and patient enough, you finally make progress and get results.

Frankly, the job of getting everybody to agree right at the moment has me running in all directions, because we are presenting to each of these four states a bill to ratify the compact establishing the commission. We are very fortunate, however, in that the Governor of New Jersey is 100 percent sold on this project; and he is sufficiently influential in New Jersey to make us confident that the project will be adopted in New Jersey. The project is so dear to his heart that he will even on appropriate occasions contact people in adjoining states and use his influence there. The job is just to get around and try to find out what is bothering people; then try to show them that, if there is something troubling them, it either really has no basis or can be easily resolved.

QUESTION: Up to now I have been an oyster enthusiast of the raw type, but you have about convinced me that we shouldn't eat any Delaware oysters. You just stated that, because of the industrial wastes, phenol and so forth, in the lower parts of the river all the way down, Philadelphia is going to have to get a new water source, because it is not economically feasible to take care of that water. What are you going to do about these oyster beds down the river?

MR. ALLEN: I probably will not be able to "unconvince" you. But the story is that these oyster beds are located way down in the bay, particularly around the Maurice River in New Jersey and along the corresponding shore in Delaware. Despite all the industrial and municipal wastes being discharged in the Philadelphia area, the water in the bay is uncontaminated and not only satisfactory for, but conducive to, the production of oysters. We, however, are going to help the oysters by our project, because we are going to bring them more and better water.

QUESTION: Judging by the objectives that are contemplated in these states, the approval of Congress will probably have to be obtained for this compact, since the War Department is in charge of navigable rivers. How is the Federal Government involved in this?

MR. ALLEN: We are all aware that our projects have to be very carefully coordinated with the Army engineers, as the Corps of Engineers is the principal Federal service dealing with water problems in this section of the country.

In the development of our program we have had continuous assistance from the Army engineers. As a matter of fact, they are helping us now by having some experiments conducted at Vicksburg Experiment Station to more definitely prove the benefit of this project in combatting salinity.

As you pointed out, if the project is adopted by the states under the terms of the interstate compact, that compact will have to be approved by the Congress. We do not anticipate any difficulty there. This project would have to be subordinated to any interests regarding navigation,

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but we don't see that there is any conflict of interests in that respect, but we would be subject to such regulations as might apply.

We also would be subject to the laws and regulations for the production of hydroelectric power. That would come under the Federal Power Commission. But we see no conflict there.

COLONEL ENNIS: Mr. Allen, we very definitely put this lecture at the end of the course so that we could present from this platform the two points of view affecting the use of water--one, by the Federal Government; the other, by the states. On behalf of the college, I thank you for a very interesting talk.

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