Somebody has suggested—I think it was Doctor Edsall—that in manufacturing poisonous material we can rely on control, and that if the risk or danger in tetraethyl lead applied only to its manufacture, it might not require prohibition.

We have reports from England that after 14 men died from the use of tetrachlorethane in airplane dopes the use of tetrachlorethane dopes was prohibited.

Representing the workers who must work, and who must take such conditions in their work as are offered to them, and considering that 11 men engaged in the manufacture of tetraethyl lead have already died in spite of medical examinations twice a day, we are confronted with a serious hazard in the manufacturing processes alone which calls for drastic action.

The next question which came up in the discussion to-day was the question about handlers of either ethyl fluid or ethyl gasoline.

It has been reported by the concerns in question that 20,000 filling stations are using ethyl gasoline, and have used it for a period of two years. And yet I have heard a report of only 30 medical examinations out of all the men in the country handling tetraethyl gasoline. I doubt whether the report of 30 examinations out of a total of 30,000 or probably 50,000 men using this material is significant.

I also want to call attention to the remarks that Doctor Kehoe made when he said that "the recognition of early symptoms is by no means easy"; and that the workers only occasionally show early signs of poisoning.

We who are working in industry know that the average worker is not an industrial diagnostician. We do not want the worker to be a diagnostician, because if he is he may diagnose his case wrongfully. We also know, we workers, that the average physician is not familiar with the signs of occupational diseases. He has to be educated to that. He does not know the group of symptoms which make up tetraethyl lead poisoning. You take constipation, or you take decreased red corpuscles, or you take pallor, or you take a low blood pressure—you take all those things and put them together; and an expert in occupational diseases may recognize them as an incipient occupational disease; but the ordinary medical practitioner and the ordinary worker would not recognize such a condition as an occupational disease, or if he did recognize it, you would call him pathological.

The point I want to bring out is this: That you can not rely on negative evidence in a hazard which goes the length and breadth of the country, and which may affect, in industry alone, almost a million workers.

I have figures from the United States Census Bureau for 1920, which show that there are 280,000 chauffeurs; 31,000 garage laborers;

411,000 draymen and expressmen; and, taking the Ethyl Gasoline Corporation's figures, at least 40,000 service-station operators, which totals up to about 767,000 workers who would be directly affected—not counting those engaged in the manufacture of tetraethyl lead.

Now, I believe that we should separate out from the public health hazard the hazard to teamsters and chauffeurs and traffic "cops," if you will, all those who work for 8 hours a day or 12 hours a day in an occupation which exposes them constantly to exhaust gases in stations and on crowded thoroughfares and traffic jams, so that they will get more than their proportion of any poisonous materials which come out in exhaust gases.

And I agree with Doctor Edsall that, until a thorough examination has been made of a representative group of workers exposed to the exhaust gases contained in tetraethyl lead gasoline, over a period of time sufficient for them to absorb this material, with the necessary tests of feces and urine, to determine whether there has been any lead absorption—until such examinations as those have been made, we are not justified in saying that there has been no poisoning just because the workers themselves have not reported symptoms of mild poisoning.

And finally, we have the case of the public—the public health hazard, which has been discussed in a very satisfactory manner by Doctor Henderson and Doctor Edsall and Doctor Emerson, who stated that, in addition to the risks which so many of our workers in industry (who are also part of the public) already have to undergo from lead, you are adding daily the possibility of a tetraethyl lead risk which will ultimately bring the lead beyond the stage where it can be resisted.

I believe that the Public Health Service is the agency through which a thorough scientific investigation of this entire matter should be carried out. I believe that this investigation should be made entirely out of public funds; and I think that the United States should be self-respecting enough to realize that, when there is a public health hazard involved which affects the entire population, that hazard ought to be investigated out of public funds and by a responsible public agency.

I believe that after such an investigation is made, another conference should be called, which should be a public conference, and at which labor should be represented, to which this report should be made. And I believe that until that time, and until the manufacture, distribution, and use of tetraethyl lead has been proved conclusively to be safe, its use should be discontinued.

The CHAIRMAN. I think you are estimating the chauffeurs very low. I think there are about 50,000 of us who do our own driving here in Washington.

Mrs. BURNHAM. Well, we always believe in underexaggerating.

The CHAIRMAN. I will ask Mr. Berres, secretary of the metal trades department of the American Federation of Labor, to address the conference.

MR. A. L. BERRES

Secretary, Metal Trades Department, American Federation of Labor.

Mr. Chairman, I want to express to you the appreciation of the American Federation of Labor for the invitation to be present. This discussion here has been very interesting to me, because there have been so many things said that I did not understand.

I do want to say, however, without having had an opportunity to look into this matter carefully, that there has been enough said here to-day to warrant those having authority to do something at least in the shape of vaccinating this patient now under suspicion.

I feel that, as has been stated here by some of the previous speakers, until such time as it can be definitely determined that there is no hazard in the manufacture and handling of this gas, its use ought to be prohibited.

I appreciate what it means to take the "knock" out of a motor. But we are more concerned about taking and keeping the knock out of the human being than we are in taking the knock out of motors.

From that point of view, Mr. Chairman, the American Federation of Labor would attack the use of this gas. We feel that where the health and general welfare of humanity is concerned, we ought to step slowly.

I want to take advantage of this time to say that, notwithstanding that we are often charged with being against progress and efficiency, that is not true. We are against any progress and efficiency that carries with it serious injury to the human family.

If we can get progress—and we can, because I have no doubt that some of the gentlemen here are thoroughly capable of finding a method by which this gas can be used without injury to those handling it—we welcome progress if it does not mean injury to the human being.

With those thoughts in mind, I wish to express the hope (and I believe I voice the sentiment of many of those who are here) that this gas will not be used until a thorough and comprehensive investigation and study is made as to just what does happen to those directly engaged in the manufacture and handling of tetraethyl lead and tetraethyl-lead gasoline, and in fact to the general public.

I have often found myself in traffic jams—and while I do not know anything about chemical action, I have felt that something would have to be done in order to do away with the bad effect of monoxide gas in the public automobile jams.

The only thing we wish to say at this time, Mr. Chairman, not having had opportunity to study this subject, is to urge that, until a comprehesive study can be made to determine whether or not this gas in injurious, its use be prohibited.

I would like to suggest to those present at this meeting that, inasmuch as certain gentlemen have, I believe, on a former occasion agreed not to use this gas pending a study of it, that we jointly request them not to use this gas until we can determine whether or not it is injurious to those who must come in contact with it.

The CHAIRMAN. Is there any further discussion?

DR. YANDELL HENDERSON

Professor of Physiology, Yale University

There is a technical point on which I think I can throw a little light, by analogy.

Doctor Hayhurst referred to a number of reports from practicing physicians regarding the health conditions in Ohio.

Now, I feel fairly sure of what I am going to say, and that is this: That not one good practicing physician in a thousand would recognize a slight degree of tetraethyl lead poisoning when the lead is inhaled. If he had a good medical education and if he knew the man had a stomach ache and certain other symtoms of lead poisoning, he could size it up as lead poisoning. But if the material is inhaled—and its symtomology is altered when it is inhaled, because of its wider distribution in the body—it is extremely likely that nine hundred and ninety-nine ordinary physicians out of a thousand would fail to recognize the condition as lead poisoning.

I base that assertion upon observations which I have made in the town of Danbury, Conn. Probably everybody has heard of the "Danbury Hatters," and the cases of mercury poisoning there. That is a fairly close analogy. That has been going on for a long time. Some of us have been trying to find out some way of improving the situation.

The difficulty has been that, even when a man's condition was so bad, and his hands were shaking so terribly that he could not reach out and take a glass of water and put it to his mouth, the ordinary physician could not recognize that as mercury poisoning. And what we have had to do was to get physicians who can diagnose it and recognize it; and now that they have physicians who can recognize it and know that it is mercury poisoning, and who will so testify before the compensation commissioner, the compensation commissioner can award compensation; and the insurance company has to pay the money; and it comes back on the manufacturer, and con-

ditions are improving. So we believe that we are cleaning up that situation.

But the first thing we had to do was to realize that the general run of physicians did not recognize that form of poisoning when they saw it. And so I think it is fairly clear that we can not expect the ordinary practicing physician to recognize the symptoms of tetraethyl lead poisoning at this time.

For that reason, it is very important that the medical data with regard to these occupational diseases should be collected, and that the medical profession should be educated, through the United States Public Health Service, so that the medical profession can diagnose lead poisoning in all its forms and manifestations.

I would suggest, Mr. Chairman, that you ask Doctor Hamilton to address the conference upon this subject.

The CHAIRMAN. Doctor Hamilton and I have had conferences, both here and abroad, and I know that she always has something worth while to say; and in regard to this particular subject of tetraethyl lead poisoning I think she can tell us something about her observations. I wish she would say something to help us on this problem.

DR. ALICE HAMILTON

Professor of Industrial Medicine, Harvard University

Mr. Chairman, I do not think I have anything at all of value that I can add to what has been said. I would only like to emphasize one or two points that have been brought out.

One is the fact that lead is a slow and cumulative poison and that it does not usually produce striking symptoms that are easily recognized.

The other is that if (as does seem to have been shown) this is a probable danger, shall we not say that it is going to be an extremely widespread one, an extraordinarily widespread one?

Now, as Doctor Edsall has said, you may control conditions within a factory. But how are you going to control the whole country?

Speaking for myself, I do not know of any lead trade which (although it has been improved under modern methods and scrupulous care) has been made entirely safe. There may be one. I do not know of any, however. There is always some lead poisoning in connection with every lead trade, even when it is done in a factory under medical supervision and with a very conscientious employer.

If we were to assume that all of the precautions would be taken with this new form of lead that could be taken, it would mean eternal vigilance—and we all know the American temperament too well to believe that that eternal vigilance will be kept up all over the country.

I would like to make a plea to the chemists to find something else, and I am utterly unwilling to believe that the only substance which can be used to take the knock out of a gasoline engine is tetraethyl lead.

May I draw a comparison by showing what happened in England when they faced a very much more serious emergency than we are facing here?

We all know that in 1916, England had every reason to ignore minor dangers in her effort to produce fighting planes. Well she was covering her fighting planes with a tetrachlorethane dope.

Now, that poison caused a toxic jaundice, and sometimes a fatal form, among the dopers. But how many cases were there? Only about 92; and only 12 of them died. And yet every time there was a death, a question was asked in Parliament, and the ministry of munitions had to answer that they had put their chemists to work; and that they hoped very soon that they could announce that they had found a substitute for tetrachlorethane; and in 1917, when England was frightfully hard pressed for fighting planes, they made the announcement, after only 12 deaths had occurred, that they had found a substitute; and that from that time on no tetrachlorethane solvent would be used in connection with any fighting plane in England.

Now, we can not say that we in the United States are up against any emergency like that. And yet we have already equalled that death rate.

If the English Government could consider such sickness and death as serious even in war times and if the British chemists could find a substitute, I think it is not unreasonable to ask that our chemists set about it to do away with tetraethyl lead, by finding something else that will do the same work.

The CHAIRMAN. I notice a gentleman here who has been an industrial officer of a great State for a good many years. I will ask Doctor Patterson to address the meeting.

DR. FRANCIS P. PATTERSON

Philadelphia, Pa.

Mr. Chairman, for a period of 18 years—first of all, as an industrial physician and then as the head of the department of industrial hygiene for the State of Pennsylvania—I have come very intimately in touch with the problem of lead.

And when we strip the various chemical terms that we have used here of their verbiage and analyze them, we find after all that this tetraethyl lead is just a question of lead itself.

Now, I am sure that we all here know that lead is an industrial poison. I do not think anybody will be so foolish as to claim that it is anything else. I am sure that we all appreciate that, so far as the manufacture of tetraethyl lead, carbonate of lead, or any other form of lead are concerned, it is a matter for the individual States to regulate. The individual States have the power to regulate how tetraethyl-lead gasoline shall be distributed in garages; how it shall be handled in filling stations and other places where you get gasoline. There is in the last analysis only the problem of one more lead trade to consider.

Now, Doctor Hamilton will bear me out when I say that lead is in wider use than all other industrial poisons. And it seems to me that the amount of lead which goes into the making of tetraethyl lead in the manufacture of gasoline is a very negligible factor compared with the world-wide use of lead in the various industrial processes of to-day.

I am quite sure that if any group of people come together and say, "You must find a substitute for the lead storage battery; it is a terrible thing; it is an industrial poison; you must absolutely do away with it all over the world"; or if they should say, "You must do away with lead paint, because painters will paint houses and they will take a chew of tobacco while they are working, and they will take a chew of tobacco when their hand is covered with lead paint, and they will put their hands in their mouth and swallow a certain amount of the paint"; or if they should say, "People will turn on the illuminating gas and commit suicide, and therefore you must stop the manufacture of it"—I am quite sure that, in view of the fact that you have a wide distribution of all these various poisons, if you do away with one of them you should do away with all of them.

It seems to me that the way to approach the question of the addition of one new lead trade to the many hundreds of lead trades that are now in existence, is to look at it from the standpoint of common sense and not to be stampeded.

And I am convinced that with modern methods of street flushing that are certainly used in all our large cities, that this vast accumulation of lead that we have heard about will be destroyed; we have heard about the vast accumulation of lead between Twenty-third Street and Central Park in New York City; and that will probably be flushed down into the gutters, and into the sewers, and will form a very suitable deposit in the bottom of the Hudson River and the East River.

I am also perfectly sure that no corporation which is engaged in the manufacture of any compound of lead is anything but deeply conscious of the risk that it is taking in having it handled by its

employees; and is going to take every precaution possible for the purpose of protecting these employees from the hazard of their occupation.

I believe that if somebody should say that we should wipe out every one of these lead trades today, there would be almost an uproar. It seems to me that the sensible thing to do is to approach this entire question by applying to it the test of experience that we have gained in the handling of other lead compounds; and I am quite sure that if that is done the time will arrive in which you will find a method in which tetraethyl lead can be used quite as safely as the storage batteries are used to-day.

The CHAIRMAN. We will be glad to hear from Mr. Wolman.

Mr. WOLMAN. I am here entirely as an observer, Mr. Chairman, and have attempted to follow, more or less intelligently, many of the things that have been going on. And I will gladly report what is said and done here to the State and provincial health officers.

The CHAIRMAN. Is there anybody else who would like to address the meeting?

Doctor HAYHURST. Mr. Chairman, may I just add a word in regard to our analyses in Ohio?

They were not made by ordinary practicing physicians. They were made by order of the health commissioners of the various cities and by use of their regular personnel, i. e., full-time men, especially in the larger cities. They were not made by questionnaires but by methods very similar to those by which the investigation was made in the city of Detroit, where all of the filling-station men, and in our case, many of the garage men were covered.

Doctor Rockwood, for instance, was himself for two years with our State Survey of Industrial Health Hazards and Occupational Diseases. He reports very briefly, as he always does in his correspondence, and says (under date of May 11, 1925), "Our investigations have been negative in this matter, although we have given it considerable attention."

This is for the city of Cleveland. Now, to me, that statement of Doctor Rockwood's covers a good deal.

In the city of Cincinnati, Doctor Peters says (under date of May 12, 1925):

> Some little time ago, at the time when this matter first came up in New York City, we made an inspection in every filling station in the city of Cincinnati, interviewing the employees. In no case did we find any employee knowing of any case of ill health attributable to tetraethyl lead gas. We have had no case in this city coming to our notice, even from hearsay sources, since that time.

THE CHAIRMAN: Commander Wilson, of the Navy, I hope, will have something to say to us.

COMMANDER E. E. WILSON

Bureau of Aeronautics, Navy Department

Mr. Chairman, I regret that I have not been here all day, and I may discuss something that has already been discussed by the conference.

The question of tetraethyl lead and the use of ethyl gas as fuel for the engine in aeronautics is one that is very important, and one that will be increasingly important as the quality of motor gasoline falls off.

In the aircraft engine, of course, the question of power is everything, and the question of fuel economy is everything, because the weight per horsepower of the engine and the weight of the fuel required for a given range is reflected back in the weight of the structure.

During the last two years we have been very much interested in the development of fuels for high power. We have tested "doped" fuels and have been at work in the development of special fuels of high nonknock value.

Among these special fuels we have tried two which were manufactured from crude oil by special processes differing from that of straight gasoline. These have been used in the service, and the reaction of the personnel to these fuels was very unfavorable. The odor was very bad. The toxic qualities were supposed to be very bad, and the net result was that we had to withdraw those fuels from the service.

On the other hand, we have used large quantities of tetraethyl lead with complete success, and so far we have had no reports of any difficulties.

Last year we ran some 10 endurance flights during which we used 750 gallons of ethyl gasoline per flight. This was "doped" by the men themselves. The gasoline was doped to three or four times the normal strength for commercial gasoline. There were no reports of any difficulties at all on that, although the men knew that a certain amount of danger was to be encountered.

Two weeks ago I made a 10-hour nonstop flight, in which we used tetraethyl lead in aviation gasoline, and during the 10-hour flight we were leaning over the fuselage with the exhaust gases coming over our faces. We felt no bad effects.

After that flight I was physically examined very carefully, and the medical report was that the doctor hoped that I was not as uninteresting in every way as I was pathologically.

This particular nonknock fuel, aviation gasoline with tetraethyl lead, is the only satisfactory fuel that we have at the present time.

I understand that in Great Britain, where they have been able to obtain high test gasoline from Sumatra, and can, therefore, get a higher-test gasoline than we can, they have not been forced into the use of such nonknock fluid. Lately, however, the supply has fallen off and they have become very anxious to get ethyl fluid.

After thorough investigation we are convinced that no danger can result from this fuel in aircraft, and that the hazard is so small as compared with the hazard from fire or crashes that wherever it is indicated we hope to be able to continue to use it.

It is of particular advantage on distant service, where we can not get the high-quality gasoline that we need, and we can get this tetraethyl lead fuel.

Therefore, as the result of considerable investigation, I feel that there is no difficulty whatever in using this fluid in aircraft. It is of great military importance that nothing be done to preclude our getting it, and we hope that a way will be found to render it possible for us to obtain this fuel in quantities from time to time.

The CHAIRMAN. Commander Wilson, may I ask whether your men are under medical supervision all the time?

Commander WILSON. Only general medical supervision. We warn them against the fluid; and whereas they were very chary about using these other gasolines that smell so bad, they had no hesitancy at all about spilling this tetraethyl lead, or ethyl gasoline, on themselves; and we even had difficulty in making them wash themselves off with soap after using it.

As a general thing, the operating personnel using a fluid of that kind would object immediately if they thought it dangerous.

Because of the publicity that has been given to the dangers of tetraethyl lead we thought that we might get some objection from the men to its use, but up to date no bluejacket has objected to using it.

The CHAIRMAN. Thank you very much for your statement, Commander Wilson.

Colonel Vedder, have you anything further to tell us? And may I ask for information whether you are still conducting your experiments?

Colonel VEDDER. We are not.

The CHAIRMAN. Doctor Hektoen represents the Academy of Sciences. I notice he is there at the door. Have you anything to tell us, Doctor Hektoen?

Doctor HEKTOEN. No, Mr. Chairman.

The CHAIRMAN. Doctor Hammer represents the Institute of Commercial Engineers.

Doctor HAMMER. Mr. Chairman, I have no experimental data to offer. I am not a physiological chemist, but, of course, I am very

much interested in the statements made here. I am sure some of them were only due to misinformation on the part of certain speakers who did not appreciate how seriously the chemists as a whole viewed the situation, and what very serious effort has been made from the start to find other things; or how completely the whole hazard has been reviewed by them and the responsibilities considered; or the extent of cooperation to which chemists are quite prepared to go to get out anything that is better.

Some reference has been made to an experience during the war at one of the arsenals that I do not think was quite the kind of experience that it was said to be; but I do not think it is proper to enter into that kind of discussion at the present time.

I am sure the American Chemical Society and the American Society of Chemical Engineers will be very glad to assist in any way in meeting the problems growing out of the use of tetraethyl lead.

The CHAIRMAN. Doctor Thompson represents the Bureau of Standards. Would you care to say anything, Doctor Thompson?

Doctor THOMPSON. I do not believe I have anything special to say.

There is just one thought, however, that I would like to submit. I think the idea of the commissioner for the State of Pennsylvania ought to be emphasized, and that is that in looking at the question of the adoption or nonadoption of any additional lead industrial risks we should look at the problem in the large, rather than be swayed by prejudice. It is often much easier to see the concrete immediate dangers than to evaluate the perhaps more important industrial advantages. We do not like to match the life of a man against the life of a Nation.

Nevertheless, there are things to be considered on both sides; and I believe there should be a thorough investigation of the whole subject by the United States Public Health Service, which should bring out both sides of the question.

The CHAIRMAN. Is Doctor Gruse, of Pittsburgh, here? We want to get all the light on this subject we can.

Doctor GRUSE. I am here simply as an observer. I have nothing to say.

The CHAIRMAN. Is Miss Whitney, of the Bureau of Labor Statistics here?

Miss WHITNEY. I do not have anything to say, Mr. Chairman.

The CHAIRMAN. Is Doctor Corbin, of the New York Academy of Medicine, here?

Doctor CORBIN. Mr. Chairman, I have nothing to contribute to this discussion.

The public health committee of the New York Academy of Medicine has been very much interested in this subject, which we have studied purely from a chemical point of view. I can only add that, if an investigation is made on a somewhat larger scale, I am sure the public health committee of the New York Academy of Medicine will be very glad to contribute its share to the scientific investigation of this product.

The CHAIRMAN. Thank you very much. Doctor Marshall, have you anything to suggest to the conference?

Doctor MARSHALL. I have nothing particular to add to the discussion. I have had no experience at all with the subject. It seems to me that the impression I have got from listening to the evidence presented is that there would be certain hazards from the use of this substance which would seem to involve the garage workers; that there is an amount of dust which is deposited in the chamber through which the air is rapidly circulating; and assuming that the same proportionate amount would be caused in the garage, it seems to me that in the garage there is a very distinct hazard attached to it.

As to the other aspects of the question, it seems to me that Doctor Edsall has very well summed them up: There is a hazard there, but how great a hazard we do not know yet.

The CHAIRMAN. Thank you, Doctor.

I see the National Safety Council is represented. Doctor Cameron, have you anything to suggest?

Doctor CAMERON. No; I am just here representing them.

The CHAIRMAN. Is there anybody else now before we close the hearing? Mr. Howard, of the Ethyl Gasoline Corporation.

MR. FRANK A. HOWARD

Representing Ethyl Gasoline Corporation

My associates of the Ethyl Gasoline Corporation, which includes the General Motors Corporation and the Standard Oil Co. (N. J.), and, in an indirect way, the du Pont Co., have asked me to make a brief statement concerning the position of our company regarding this meeting and the problem which you have to attack here.

I think Doctor Henderson correctly stated that we have a real responsibility. How great that is I do not think any of you gentlemen will ever be able to appreciate, because it has been so manysided.

Relatively speaking, the responsibility of Doctor Henderson, and of you gentlemen of the Public Health Service, is rather simple; that is, you have but one problem, and that is, Is this a public-health hazard? Unfortunately, our problem is not that simple. We can not quite act on a remote probability. We are engaged in the General Motors Corporation in the manufacture of automobiles, and in the Standard Oil Co. in the manufacture and refining of oil. On these things our present industrial civilization is supposed to depend.

I might refer to the comment made at the end of the war—that the Allies floated to victory on a sea of oil—which is probably true. Our continued development of motor fuels is essential in our civilization. And our dependence upon a continuing supply of petroleum has been a subject which interests everyone who has the interest of his country at heart. The President has gone so far in the past few months as to appoint a special committee, presided over by Doctor Work, to see if they could not exhaust all the possibilities of conserving petroleum in every direction.

Now, as a result of some 10 years' research on the part of the General Motors Corporation and 5 years' research by the Standard Oil Co., or a little bit more, we have this apparent gift of God—of 3 cubic centimeters of tetraethyl lead—which can be produced at a low figure, an inconsequential figure ultimately, and which will permit that gallon of gasoline, which we have recovered from the earth all over the world, because we import much of our supply and hope that we will import more in the future so that we will use less of our own supply, to go perhaps 50 per cent further, and, if our optimistic engineering friends are correct will make it go 100 per cent further in the long run.

Now, there is that situation. We are presented with that gift of God which enables us to do that. But there are problems connected with it; the engineering problem must be worked out, and the production of cars must be worked out.

And we are presented with this question at the start concerning the use of tetraethyl lead, the question of the health hazard. What is our duty under the circumstances? Should we throw this thing aside? Should we say, "No; we will not use it," in spite of the efforts of the Government and the General Motors Corporation and the Standard Oil Co. toward developing this very thing, which is a certain means of saving petroleum? Because some animals die and some do not die in some experiments, shall we give this thing up entirely?

Frankly, it is a problem that we do not know how to meet. We can not justify ourselves in our consciences if we abandon the thing. I think it would be an unheard-of blunder if we should abandon a thing of this kind merely because of our fears. We could not justify an attitude of that kind; I do not think anybody could. Possibilities can not be allowed to influence us to such an extent as that in this matter. It must be not fears but facts that we must be guided by. I do not think we are justified in trying to reach a final conclusion in this matter on fears at all; nor are we justified in saying that we will cease this development because of fears we entertain. This develoment must be stopped, if it is stopped at all, by proofs of the facts.

Now, on that point, I think this conferenec has had a wonderful effect. We have had presentations of facts on both sides.

But I must say—perhaps I am a little biased—that most of the facts presented have been in favor of the use of the tetraethyl lead product. Perhaps some of those present will object to this statement; but I am referring now to the experience in the use of the commodity. So far as the record of the use of the commodity for its intended purposes is concerned, I think we have had a 100 per cent record.

As against that, of course, there are many cases of experimental evidence indicating a possible hazard. All of those facts that we have available must be sifted and weighed. Unfortunately, to-day many errors have crept into our discussions. One quite apparent error that came up was in the statement that manufacturers of this commodity have to have their employees medically examined twice a day. Of course, this gathering is not competent to weigh all those facts and statements. But somebody must be found who is able to go into the questions of fact involved and to weigh the facts and determine whether there is anything serious in this hazard problem with which we are confronted now.

And I do not think there is any better suggestion that could be made than to have the Surgeon General of the United States Public Health Service assume the responsibility, if he will do so. I appreciate that it is a very serious and difficult undertaking; but if he will assume the responsibility of trying to get together and weigh all those facts, that will be the only way out of what seems a hopeless dilemma to us at this time, because we do not know what our duty under the circumstances is.

And I think, Mr. Surgeon General, that you would afford to us the best hope we have of a solution of the problem by helping us to determine what our duty in the premises is; and on behalf of the Standard Oil Co., the General Motors Corporation, and the du Pont Co., I assure you that every resource we have for supplying information will be placed at your full disposal in making such an investigation.

Mrs. BURNHAM. Mr. Chairman, in regard to the remarks of the gentleman who spoke for the General Motors Co., my statement that the examination of employees working on tetraethyl lead products was made twice a day was a public statement made by Commissioner McBride, of the State of New Jersey, after visiting the plant of the Standard Oil Co. and getting the information from the Standard Oil Co.'s physicians. I would like to read this statement:

Before men were employed in the ethyl plant they were subjected to a very careful medical examination. In no instance was any man employed at this work without first undergoing this examination. After the men had

started to work in this department examinations were made weekly. In some cases, where it was deemed necessary, men were examined as often as once or twice a day. These examinations were very thorough and included blood pressure, examinations of the lungs and heart, and having the teeth examined.

While I am on my feet, I want to make the statement that this "gift of God," to which the gentleman referred, was not a gift of God when those 11 men were killed or those 149 were poisoned.

And I think the statement of my brother delegate, Mr. Berres, to the effect that the thing that we are interested in in the long run is not mechanics or machinery, but men, is a thing that we have to bear very carefully in mind in this age of speed and rush and efficiency and mechanics.

After all, if the human beings that are left are not able to enjoy all of this efficiency and speed, there is no use in having it. Our experience during the war with the draft ought to prove to us that the physical stamina of this country is going down. At that time one-third of the young men of the country in the best days of their youth were found physically unfit to be drafted to serve in the Army. And when a condition such as that is brought out, then it is time for us to take notice and decide in what direction we are going.

Doctor HENDERSON. Mr. Chairman, I would like to say one other word in regard to the statement of the gentleman representing the du Pont Co., the General Motors Co., and the Standard Oil Co.

He spoke as if the matter had just come up, and as if it was too much to ask that they stop the manufacture and sale of tetraethyl lead.

Now, that is not quite an ingenuous statement, because I have in my hands correspondence in which the first date is March 13, 1922. That is a little over three years ago. In that correspondence they asked me if I would investigate this matter. I believe that every other man present who works in the field of industrial physiology and toxicology received a similar request.

We all, I think, indicated that we would be willing to make an investigation, provided we could do it freely, without any dictation, and simply to find the facts. In practically every case the person addressed intimated—as I did very strongly—that we looked at the matter as one that should be investigated from the standpoint of public safety. Then the Ethyl Gasoline Corporation dropped the matter. They did not have the investigations made.

We can not turn back the hands of the clock; we can not go back to conditions as they were three years ago. But we can at least ask that, in view of the fact that the Ethyl Gasoline Corporation neglected to have an investigation then which we were perfectly

willing to carry out, they should stop now until we have an opportunity to make it.

The CHAIRMAN. Is there any further discussion?

Miss SILVERMAN. Mr. Chairman, on behalf of the Workers' Health Bureau, may I read the report of Commissioner McBride, of New Jersey, which covers one of the statements made by the representative of the Standard Oil Co.? In the report with regard to the Standard Oil Co.'s plant, it is said—this is in regard to one of the men employed in this plant:

This man had been employed in the production building as a general clean-up man. We were advised that he was uncleanly and would not wash as he should and as a consequence became affected and died. Every man now engaged at this work is compelled to wash frequently and bathe daily. If this order is disobeyed, they are made to forfeit any pay due them on any day the rule is disregarded.

I ask you gentlemen to consider the fact that you are asked to allow a man to be subjected to contact with a poison which is considered hazardous by the leading scientists of the country. And then you expose them to that poison out of which the manufacturers are making profits, the manufacturers penalize those men by making them forfeit a day's wage.

The CHAIRMAN. Are there any further remarks?

RESOLUTION

Doctor NICOLL. In order to crystallize what I have tried to suggest, I offer the following resolution, prepared by Dr. Haven Emerson and myself:

It is the sense of this conference that the Surgeon General of the United States Public Health Service appoint a committee of recognized authorities in clinical medicine, physiology, and industrial hygiene to present to him, if possible, by January 1 next, a statement as to the health hazards involved in the retail distribution and general use of tetraethyl lead gasoline motor fluid, and that until such time distribution of this substance be discontinued.

Doctor PATTERSON. Mr. Chairman, arising to second the resolution which has just been offered, I first of all believe, and respectfully suggest, that that committee be rather limited in numbers, because I think that every one who has had experience in working with large committees has found that such committees are at best unwieldy. And I therefore offer an amendment to this resolution, that the committee be limited to seven members.

I furthermore suggest for your consideration that while this committee is at work the opportunity should be given to have practical experience placed before the committee as to what is the effect of the distribution of ethyl gas.