Q  Dr. Sabin, do you remember how you got the news of the Canadian thing. Did that come from the Canadians to you or did you learn this from the surgeon general and the committee?

A  Oh, I don't remember. And I don't even--there was no committee yet you see. The public health service really wasn't involved in this because this became a campaign which was entirely a campaign on the organization and operation of the local county medical societies under state and local health offices. And so the Public Health Service that was caught in between because actually what happened was that these mass campaigns were strongly resisted by the National Foundation. Were strongly resisted and as a matter of fact, while I knew about it I never really had seen the kind of strong misinformation and recommendations against its use that came out of the National Foundation.

Q  Can you give us an example of that if you would like to.

A  Well there is for example, April 25, 1962. To all chapters of the National Foundation and they say that there is no need for it and goes on to say of course it gives some--let's see where are the attachments here. They are not part of it. At any rate, the gist of it is that there is no need for mass immunization. This is the same thing. In other words, when they lost, and oh, they had a tremendous amount of influence within the Board of Trustees of the American Medical Association, and in 1961 they thought well alright they lost
but there was no vaccine. There was no plan for using it but then everything happened after Arizona and then when county medical societies and state health officers began to operate, they gave out this recommendation against it. For example it says here, since the last statement was issued in our March 27, 1962, the surgeon general licensed two companies to manufacture the three live virus polio vaccine strains which he found to be safe and effective.

As set forth in the statements, the accompanying statements, the killed virus vaccine has already eliminated polio. There is no need for it. And then the only need is well, they have to do it to the newborn children and then it is up to the professional judgment of the local medical authorities to decide. And they opposed. This was to all the chapters of the National Foundation. The community programs were organized despite a tremendous campaign that the National Foundation carried out against it. So, actually what happened. And I don't remember when those cases came along. But, Canada, they had a way. They started off and they gave Salk vaccine first and then they gave trivalent vaccine. At any rate, there were four cases. They still had polio in Canada. They still had polio in the United States and from all the four cases Type 3 was isolated. When you give all three types of oral polio virus vaccine to a group of persons, several weeks later the probability of getting Type 3 rather than any other type is very much greater because that one was more extensively.
So you have out of two million, you have four cases, well maybe you couldn't say. Now whether or not they were really polio or whether or not there was polio that naturally occurred. It was never resolved. But then the Public Health Service organized surveillance in all sorts of cases that occurred after vaccination because this actually was going on during the summer when polio is occurring, and there are all sorts of other non-descript central nervous system manifestations that can be confused and has been confused over the decades, for centuries, with polio, now began to be reported as polio after vaccination. But even so, they were very small numbers of cases out of millions. And as it happens you can never quite tell. Some cases occur after Type 1 because they were given individually. Some after Type 3. And the way it was given, the [Type] 1 was given first and then I think because the summer was coming along it was followed four weeks later rather than six weeks later by Type 3. So in effect what happened in my judgment is that the Type 3 was given later in the summer when there is more spread, of spontaneous polio virus. But even so, a very careful analysis of fifteen cases after some millions of Type 3 doses showed a very marked difference of opinion. It was not clear-cut. First of all they were really polio, and the criteria on which to regard whether or not it was a case of polio or not a case of polio was so poor that among different persons who were qualified. Maybe they were
all equally qualified to judge. Some were accepted as clinically compatible. Some were not. And I have a number of letters here which you have brought to me today.

Q Now why don't we--the surgeon general did have an advisory committee. Now you were a member of that advisory committee, and there were other people on that advisory committee and as you indicated there were differences of opinion on that.

A There were differences of opinion which had to do with evaluating cases that happened to occur concurrently. There were certain things about which there is no difference of opinion. Guidelines. Within the application of the guidelines became very difficult. For example it was evident that as long as polio is occurring that some cases were bound to occur concurrently with the administration of vaccine.

Secondly, that it would not always be easy to determine whether a case was polio and that obviously if you couldn't say everybody agreed on that that just because you isolated a virus that you fed and that you know will multiply in a hundred thousand people if you took a drink of water you would find virus in the stool, that you couldn't say that because the virus was there it caused that condition. And so there were a number of other basic principles. But when it came to the actual determination of whether or not there might be some small risk involved, one had to go very carefully because as it went from 500,000 to a million. As it went to ten million, twenty million, it was
obvious that certain things could occur that one had to watch out for. So this was a very necessary and important activity so that differences of opinion then began to arise. Alright. Everybody said well if it occurs less than five days after the vaccine, well the vaccine couldn't have had anything to do with it. The incubation period is too short. If it occurred more than twenty-eight days after, well, it is not likely to do it then. So immediately things are excluded on one side, on another side. Then cases began to appear in a most peculiar manner.

We had let's say five or six cases in Nebraska in a small group and nothing among the many, many millions elsewhere in the country. And when analysis of the cases was made there were many very qualified people said this is not polio by the longest stretch of the imagination. And out of fifteen cases let me just stop a moment and look at the--

September, 1962. You see because this was a polio period. September, October. That about fifteen cases had been accumulated. Suspect cases that occurred after millions and millions of doses of Type 3 vaccine. And I want to see here just a moment turn it off.

Q Begin again.

A For example I have a letter here dated November 5, 1962, which is in reply to an analysis that I made of all fifteen cases as to whether or not clinically they could be regarded as polio or whether on just clinical grounds they were other things. So, and I sent around my evaluation and
more careful analysis than was possible at the meetings. Because at the meetings you see there are so many people and it wasn't possible really to go into as much detail so I would go back home with all the data and information that was accumulated and presented and analyse the material—which incidentally is available through publications. But, and then I sent it around to different people for comments. Some were members of the Committee and others were people who had to make decisions elsewhere.

And one of the people to whom I sent it was Dr. Lewis Corriel who at that time was chairman of the committee on the control of infectious diseases of the American Academy of Pediatrics. And he writes his own evaluation of the 15 suspect—on the basis of which you see, now mind you nobody said that these 15 cases were caused by vaccine. But that they had to be considered as to whether or not some of them might have been caused. So he goes on. But the calculations were nevertheless made by the Public Health Service on the basis of the fifteen. And in his letter clinical evaluations of suspect cases after review of the reference. He says of the fifteen suspect cases described I would say that six must be classified as polio-like on the basis of all clinical and laboratory evidence available. Each one needs further muscle evaluation for completion of the clinical data and to help in characterization of the clinical illness and the degree of permanent weakness. Not one of these can be proved to be caused by Type 3 vaccine virus. And then there are
others in which the question arises you see, that one really cannot say because they are peculiar situations. And there was a peculiar geographic clumping like Nebraska and Oregon and California. And then as I pointed out, why all these in Nebraska and nothing in fifteen million elsewhere in the United States. And as I analyze later because actually it was a dramatic situation into which many factors entered into. One had to exercise a great deal of care. But subsequent use in 1963 and '64 when the vaccine was administered not in the midst of the season gave totally different results.

And which again I was able to show for example that out of a certain number of suspect cases by then only one was in a woman. And that in a woman that had had four or five doses of Salk vaccine. So how can you have say twenty in men and only one in a woman. Polio doesn't behave that way. So the numbers were so small as was pointed out by others that ultimately it came down to the epidemiologists in the Public Health Service. They said well of course in any one individual case we cannot say what the situation is. But epidemiologically it would appear as if there is a sort of an accumulation of cases to lead one. And here the wording led to a lot of trouble because it was Lanier of the Center for Disease Control now who used the phrase with which the Academy of Pediatrics didn't want to go along because he said that the epidemiologic evidence--this is '62--points that at least some of these cases were probably caused by the vaccine. And the Academy which also wanted to
hold off and see what was going to happen, could not, would not go along with this statement that the evidence, that the statistical evidence pointed that at least some of the fifteen cases were caused because again statistical evidence cannot be used as people pointed out well here again from Corriel and the same thing from Fred Robbins later.

He says you are well aware that the usual laboratory tests for isolation of virus and serology are of little value after feeding live virus because everybody has multiplication then develops antibody. And he says and the epidemiological data is almost as unreliable in the frequency of occurrences of the order of one in a million or less. And as a matter of fact that is what it turned out. Because data that were obtained in 1962 subsequently were not obtained in '63, '64 and then when, in subsequent years when for practical purposes then it was used as a routine in the United States and Salk vaccine was completely eliminated. The pediatricians were giving only trivalent vaccine as it was used in Canada where after two million doses you know there were four cases and there wasn't anything that was happening with Type 3. So it was a difficult period with many differences of opinion and some very strong exceptions taken because there were very unwarranted statements that were given out to the press and I am really surprised that despite all that the mass vaccination program went into such tremendously high gear in the winter of the
late months of 196--no in the early months of '63 and then again
in '64. But I have one letter particularly that you have brought
me out of my file that I had forgotten completely. And that
was a letter that John Fox wrote I think to Dr. Sensor the
Director of the Disease Control. Just will you turn it off.

It is interesting for me to relive what were the
dramatic and also traumatic periods now practically not quite
fifteen years but almost. Fourteen, fifteen years later with
these letters. Correspondence which you brought me some of
which of course are correspondence between--some of these
letters are between me and other people. But you have here
one letter that I never saw before. This is a letter from
Dr. John Fox to Dr. David Sensor who is already dead in 1962,
Medical Director of the Communicable Disease Center.

Now John Fox was a member of the committee and
incidentally it comes to my mind now that the business of
saying which cases were really polio got to be such a problem
that the Medical Association, that the AMA appointed its own
committee to go over the suspect cases and they came up with
a quite different version, which ones they would accept as
possible cases that needed to be considered. And in his
original comments, Dr. Fox pointed out and I am reading here.

He said the matter of geographic clustering is one of
the factors which from the beginning has provided me with the
most substantial reasons for doubting the sole relation of
vaccine to the reported cases. And one of the places where
there was a clustering was Nebraska. And because this was in the minds of many people the Center for Disease Control was urged to make a more extensive study of what actually happened in Nebraska. Because my analysis and always I remember I used to check it with Charley Aring in Cincinnati who is a great neurologist I think then or later he was the president of the American neurological society and they just weren't polio. But you see the problem was that some of the people said well how do you know that if an attenuated virus were to become pathogenic in one out of a million or two out of a million people, that it wouldn't give rise to atypical things. And then you had other factors. The absence of virus in the stools of many of them. At any rate, the Center for Disease Control sent people to make a more detailed investigation. What was happening in the rest of the community. Those who didn't get vaccine. And what happened before vaccine. What happened after vaccine to see whether it wasn't just picked out and the man who went out. He is a nice fellow. You could call him knowledgeable. He brought back a report which was leaked to the press and I will read the last part of the paragraph which really was responsible for John Fox's writing to David Sensor. I take it I must have gotten a copy as a member of the Advisory Committee because I see now he sent copies of it to the Advisory Committee but I had almost forgotten. And the thing that brought it on was this. I will read the last two sentences from his letter which was responsible for Dr. Fox's writing, analyzing himself.
He said, "Looking at the Nebraska situation by itself, the picture is certainly far from clear but I certainly would not agree with the conclusion reached by Dr. Glesand that 'The epidemiologic evidence strongly indicates that the paralytic disease occurring in Nebraska is directly related to the feeding of the attenuated polio virus vaccine.' It is--"

John Fox continues. "It is most unfortunate that this statement was inadvertently made available to press and given wide publicity."

Now, whether it was made available to the press by the Communicable Disease Center which was receiving a great deal of criticism from State Health officers or--and given wide publicity. Or by the National Foundation which on the basis of a statement issued to the press on September 26, 1962 by Basil O'Connor is a vitriolic attack on the communities and the county medical societies that were doing these mass vaccination campaigns I don't know. But at any rate, what John Fox then did was to analyze what happened in Nebraska. And he said that--this is a long letter--because he goes in. He says, excluding Case 26, the sudden death in an infant in which there is no evidence of central nervous system disease. There appear to have been 33 cases all told uncovered by the surveillance team which had some manifestations of C & S disease.

This is in Nebraska. Including case 20 with a 3-day interval after the vaccine, which is eliminated by the committee and case 32 with a 5-day interval, twelve of these 33 occurred within thirty days of administering Type 2 vaccine. And another
twelve occurred more than 30 days following the administration of Type 3 vaccine and nine occurred in persons who had not received Type 3 vaccine at all. And he says there is a fairly clearly tendency to refer to such diseases as paralytic poliomyelitis when it occurred in persons who had received the vaccine. Cases 2, 3 and 7 form an interesting group in that the principle residual in each instance was footdrop. Footdrop is a manifestation of a peripheral nerve, things as a rule. Another syndrome is that of infectious polyneuritis, Guilliam Barre disease. Here you have it now. And just as we encountered in Cincinnati, three people died of Guillam Barre but it was not during a period when vaccine was being administered and there was nothing in them, you see. In addition to cases 27, 28, 29 which occurred 50, 61 and 0 days after feeding Type 3 vaccine, one should also include case 5 which occurred 12 days after vaccine and case 10 which occurred more than three months after Type 3 vaccine and fifteen days after Type 2 vaccine. These latter two are listed in Table 1 as if they were paralytic poliomyelitis. What it means is not clear but it is also of interest, that of the four cases with transient muscular involvement and the fifteen non-paralytic cases, only three all of the aseptic meningitis category occurred within thirty days after feeding Type 3 vaccine.

Well, what he goes on to say is that certainly a careful analysis of what happened in Nebraska didn't happen elsewhere in the country. Certainly it did not justify such a thoroughly biased and unreliable statement. "The epidemiological evidence
strongly indicates that the paralytic disease occurring in Nebraska is directly related to the feeding of the attenuated polio virus." Now this was unwarranted and to show the kind of sentiment and passion that accompanied the situation at the time was that it was given to the press, mind you, and spread around the country trying to stop these mass vaccination programs. And the concentration on so-called epidemiologic evidence was strongly denied by many people because again the denominators were too small and I have a letter here from Lanier who insists that entirely on epidemiologic evidence and he says here, he said, "Their position that they have taken with this trying to make a case on the epidemiologic evidence which was discounted by others." Of course Lanier went on to say only the passage of time, of further time will permit a final judgment. Well, it did. And then he says, "I am deeply concerned over the position of the surgeon general of the Public Health Service in the eyes of the medical and health professions and the public. It must be one of leadership based on respect. On September 15, we were in the position of being openly defied by several highly respected state health officers. The public criticism from some verged on contempt.

Q So it is political and not epidemiological.

A Right. Alright. Now, these were the problems that were faced, but the differences of opinion within the medical community and when the Center for Disease Control of the Public Health Service came out with these statements, I must say to the credit of the Journal of the American Medical Association,
they printed side-by-side analysis which I made to show that the claims that were made, the judgment of the Committee at large were really not valid and they published side-by-side my views on that in which I made very careful analysis. And some of these things—I don't know whether I have them here. Because there was one set of recommendations by the Public Health Service at the end of 1962 and then another one in July, 1964 which was quite different from those in '62. But let me just read from a thing. It was published, the comment that I made on the significance of the very small number of cases of vaccine associated paralytic disease. There is no question that there is vaccine-associated paralytic disease. To be very frank I am surprised that there isn't more because never was it even thought possible that all of paralytic poliomyelitis that is clinically, pathologically, was caused entirely by the three types of polio virus because in the years that preceded this, the extensive studies have shown exactly seven coxsackie A-7, some of the echo viruses were able to produce clinically and pathologically similar poliomyelitis. And not always with transitory paralysis. Sometimes with specific.

And therefore when I find now in a country in the United States 250 million people in a situation where polio viruses keep coming in every year with migrant laborer and families from Mexico where there hasn't been control. And in a situation where some communities as many as 50% of the children
had not received any polio vaccine at all, of having four or five cases as the total in the United States per annum in the last three years, '73, '74,'75. I don't know what the final figure percentage is. It is to me incredible that there aren't more. There should be more. Well at any rate, and I write here how the significance of the very small number of cases of vaccine associated paralytic disease. It has been recognized by all and I am referring here to the surgeon general's report of September 20, 1962 that concurrent cases of paralytic disease must be expected in association with vaccination in non-epidemic areas but that the expected number would be lower than in epidemic areas but not zero. Now these concurrent cases could be expected to be composed of some that were caused by polio viruses, in persons that were incubating the infection at the time that they received the vaccine. Some that clinically simulated poliomyelitis but were caused by a variety of factors including other naturally occurring viruses which could be displaced from the intestinal tract by the vaccine strains that were fed, but originally could have been responsible for the disease but no longer part of the intestinal tract.

There can also be justifiable differences of opinion among competent persons regarding the clinical diagnosis as well as judgments of compatibility. It was demonstrated in my analysis of the vaccine associated cases reported in 1962 and that was published in May of 1963. In this connection I say it is noteworthy that
of the fifteen Type 3 1962 vaccine associated cases accepted as compatible. This is in quotation marks. "compatible," definition. By the majority of the present committee--that is the advisory committee, there are four which on the same evidence were not accepted as compatible by the majority of the 1962 Public Health Service committee. And five that were eliminated on clinical grounds by the 1962 AMA committee. So of the fifteen on which the original hubbub of 1962 is based, five were eliminated concurrently by the AMA, 1962 committee; the new Public Health Service committee that met in 1964 eliminated four of those themselves that an earlier committee accepted. I say it is also noteworthy that one of the six Type 3 vaccine-associated cases regarded as polio-like and accepted as compatible in 1962 by all but one member of the Public Health Service and AMA committees. That one member was myself, but supported by Charlie Ayring after a lapse of more than a year developed further clinical manifestations that made the diagnosis of disseminated myelitis. There was multiple sclerosis acceptable to all. And this was unanimously removed from the compatible group by the committee. I also take exception to the third criterion of compatibility which calls for laboratory data not inconsistent with. It didn't say laboratory data consistent with which are almost impossible. But laboratory data not inconsistent with respect to multiplication of the vaccine virus fed. On the basis of this criterion Type 3 cases
have been accepted as compatible when there was no laboratory work in three cases, when no virus was isolated in 13 cases, and when neutralization tests were either not done, 7 cases, or were inadequate in 9 cases, and even under serologic data indicated a high probability that the vaccine virus didn't multiply at all prior to in 5 cases.

Nevertheless, according to its own criteria they were all vaccine-associated cases from 1961 to 1964. Because in '64 the Committee accumulated every case until '64. The report comes up with the interesting finding that following the administration of approximately 100 million doses of each of the three types of monovalent vaccine, only two compatible cases were associated with Type 2. Fifteen with Type 1 and 36 with Type 3. While recognizing "that it is not possible to prove that any individual case was caused by the vaccine". That is what the report said. The present report states that the above epidemiologic or statistical evidence is the basis for the belief "that at least some of these cases were caused by the vaccine."

Incidentally that is a statement to which the Academy of Pediatrics took exception. And proceeds to calculate the extent of risk on the basis that all of the so-called compatible vaccine-associated cases were caused by the vaccine. On the one hand you say you can't do it and then the risk is calculated on the basis that they were all. So I suppose it would represent the calculation of the maximum risk. The conclusion being that the risk is highest for Type 3
with one compatible case per 2 and a half million doses less definite for Type 1 with one compatible case per six and a quarter million doses and suggestively absent. I am using here quotes, the words of the committee, for Type 2 with one compatible case per fifty million doses. The question therefore is whether one can properly take the one so-called compatible case per 50 million doses of Type 2 vaccine as the baseline of expected concurrent incidence of polioliike paralytic disease and regard everything significantly above the one in fifty million as poliomyelitis caused by the vaccine viruses. That is what it comes down to. In view of the very small numbers and extraordinarily large denominators and the well known variability of the sporadic occurrence of poliomyelitis and other polioliike paralysis it is not possible that under circumstances—is it not possible I say that under different circumstances, the Type 2 vaccine virus might also be incriminated on the same type of guilt by association. Or guilt by statistical probability. It actually happened later

Actually, I say, this appears to be the situation with the four compatible cases that have occurred after the relatively small amount of trivalent vaccine that has been used thus far. Type 2 virus only having been recovered from two of these Type 1 only from one and Type 3 only from one. If the committee is to adhere to its own criteria that the vaccine virus that is found in the stools should for purposes of evaluation at least be regarded as the agent responsible for the disease
which no one really said (accepts) two of the four trivalent vaccine compatible cases must be assigned now to Type 2 so that it makes it now one in two million. If we assume that only about two to four million doses of trivalent vaccine had been distributed up to May, 1964, and it is regrettable that commercial secrecy precludes more precise information. The occurrence of one Type 2 compatible case per one or two million doses of trivalent vaccine compared with only one compatible case per 50 million doses of monovalent Type 2 vaccine would constitute highly significant statistical differences.

If the Committee had followed its own so-called epidemiological statistical evaluation it should have concluded that the Type 2 vaccine virus may be responsible for some cases of paralytic disease when it is given in a trivalent mixture. And not when it is given by itself. My point is that the one in fifty million Type 2 yardstick adopted as a baseline for epidemiological statistical incrimination of Type 1 or Type 3 oral polio vaccines as a rare cause of vaccine associated paralytic disease is unrealistic and untenable. I believe that a separate analysis of the vaccine associated cases that occurred in 1963 and 1964 and I mean here by not pooling everything from '61 and '62 when it was given in the face of epidemics. Provides additional illuminating data since with the exception of about 2.8 million doses of Type 1 vaccine that were given during the summer outbreaks of 1963 the remainder of the vaccine was used during the autumn and winter and spring. About 59 million doses of
Type 1, 54 million doses of Type 2, and 76 million doses of Type 3 were distributed from January 1, '63 to May 1964. Let me make an aside here. In spite of all the press propaganda and the discussions and scare tactics more of Type 3 was used than of any of the others because some didn't get Type 3 as a result of that. But later that disappeared. And 76 million doses of Type 3 were distributed from January 1, '63 to May '64. And it is also evident that considerable proportion of the 44 million doses of Type 1, 39 million doses of Type 2 and 23 million doses of Type 3 that were distributed in 1962 were actually used in 1963. It is noteworthy, therefore, that by the Committee, sown criteria only 4 so called compatible cases occurred among an estimated 60 million persons who received the Type 1 vaccine in 1963 and 1964 which would make it 1 in 50 million even if you accepted every compatible one as being not associated but caused. The somewhat larger number of Type 3 vaccine associated cases, 16 probable and 6 possible cases among an estimated 76 million in 1963-64 is particularly suspect because of the unusual distribution of these cases among the sexes. Naturally occurring poliomyelitis is slightly more prevalent among males than females. For example, in naturally occurring polio in 1960 among 2218 paralytic cases in the United States, 58 percent were males and 42 (percent) were females of all ages. And in the age group of 20 and over, it was 59 percent of males and 41 percent of females. And I give a reference. I mean this is all homework that I had to do. The Committee should analyze things like that but it didn't.
Then I say however, among the total group of 22 compatible—that is probable plus possible, following the 76 million doses of Type 3 vaccine in '63, '64, there was only one female. Only one of the twenty-two. And that was a 27-year old woman who had received four doses of Salk vaccine prior to receiving the oral vaccine. If the report were to apply the same kind of so-called epidemiological evaluation to these data it should have concluded that the Type 3 vaccine is without risk for females of any age. Another reason why I cannot accept the conclusions of this report about Type 3 vaccine risk and the role of the age in that risk is contained in the 1964 results which are again different from those of 1963. I should make an aside here.

In analyzing these small numbers of things they said now isn't it peculiar that most of these suspect cases are in older persons. Well of course to me it is not surprising because other central nervous system complications which have some involvement of paralytic manifestations occurs more often in older persons. But at any rate, I mean it was a temporary thing that led to a recommendation in '62 that the vaccine should be given all right but not to those over 18 years of age. So what happened in 1964 you see. Let me read over again.

In view of all this another reason why I cannot accept the conclusions of this report about Type 3 vaccine risk and the role of age in that risk is contained in the
1964 results which are again different from those of 1963. Every year is different depending on small variants. In 1964 after an estimated distribution of about 22 million doses of Type 3 vaccine from January through May of 1964, there have been only two in 22 million probable, compatible cases, both of them under one year of age. 22 million. So where does age come in. And then the four possible compatible cases constitute a particularly dubious lot as regards evidence of infection with Type 3 virus prior to onset of illness. In two cases there was no Type 3 neutralizing antibody at 31 and 32 days respectively after ingestion of the vaccine. It didn't take. In the third case, no virus was isolated from the stools obtained 18 days after the vaccine and the serologic data provided no evidence that Type 3 virus had multiplied. The fourth case was clinically atypical. It had a history of having received five doses of Salk vaccine and there were no laboratory data. Now at five doses of Salk vaccine, and this occurred repeatedly in certain portions is not enough to protect against an attenuated virus that may attack one in ten million or one in five million. What was the use of coming out with a recommendation by using Salk vaccine as for example, in Canada and then on top of that give oral vaccine. Or, as Salk has tried to say now, so that. Oh yes, I have another comment here.

A statement that vaccine associated cases occurred largely among adults I have already indicated that it didn't
hold. It didn't hold for 22 million doses, in 1964, different in '64 from '63. Alright I said, Quite aside from the fact that many of the compatible cases in adults are clinically dubious the statistical analysis of estimated rates based on the Bureau of Census survey in September 1963 shows no particular pattern other than the unpredictable distribution of small numbers. Actually if one takes only the major groups of under 20 years, and 20 to 49 one finds for Type 1 slightly more under one in about 5.7 million, then in 20-49 one in about 9.5 million. For Type 3 it is the reverse with one in 4.4 million under 20 and one in 1.9 million in the 20-49.

Well, many of these things which I think this represents the discussions that went on and it is unfortunate that these things are on the records and with the epidemic of law suits which we have in the United States in which people are suing and their lawyers are suing for everything, they keep referring to these statements of the Public Health Service. Here you've got the worst--.

Q It seems that when we look over the letters which you received from various people that there is strong disagreement among those who write as to what constitutes a clinical case of polio and those differences I find absolutely astounding. I don't know why they should be those kind of--
A Let me tell you why.

Q Yes.

A The concepts of what may be atypical, not typical, but atypical clinical manifestations of the disease called paralytic poliomyelitis is due to the fact that they have grown up during the period --

END OF TAPE