Mr. DADDARIO. Dr. MacLeod, as we have been holding these hearings we have been told constantly that we ought not to hold off doing things both because there is available technology which can solve some of our problems and also because we ought not to wait for a perfect solution. But I would like your opinion as to what we ought to be doing about these great expenditures which are presently before us. We have been told it will cost $25 to $30 billion to separate sanitary and storm sewers. We also are told we ought not to make these expenditures until we do some research which will cut down the cost as well as reducing the cost of the estimated one-half billion dollars per year required to purchase automobile exhaust devices for about 10 million cars a year. Are we paying proper attention to the area of research? Are we making the effort that needs to be made in these areas? We must remember that if we don't, we may make expenditures that do not result in the problem being solved.

Dr. MACLEOD. Mr. Daddario, in the case of the first example you used, of the combined sewers, there has been strong advocacy of very large expenditures for the separation of the storm and sanitary sewers. That figure which you gave, $20 to $25 billion, is commonly quoted, and I have no doubt, if one had to dig up all our cities and separate the sewers, that this figure is not too large. One must pause, however, in proceeding forthwith to try to find this amount of money; because as it turns out in the storm runoff in cities such as New York there is an enormous amount of organic material—wastes of one kind or another which one doesn't want to see dumped into the harbor any more than you want to see the sewers dumped directly into the harbor or into the Long Island Sound.

I don't think that this is as simple a problem—and I wish I were more of an expert on it—as merely separating the sewers. I think it has been emphasized by some of the people who have studied it that there is once again a systems approach that one has to take to this. One has to try through multiple means to prevent these, shall I call them, catastrophic runoffs that occur at times of great rain storms. If the water could be stored on rooftops, for example, and I'm not sure if this is practical, or if runoff could be minimized, then one might be able to divert this water more slowly into the regular sewage systems. But this has to be thoroughly studied from a systems point of view, and to my knowledge it has not been.

My information could be deficient on this, but 2 years ago when we were looking at the problem with the pollution panel, while it was apparent that a systems approach was needed, it wasn't apparent that it had been done then. As for the auto exhausts, Mr. Chairman, I quoted from one of our consultants, perhaps before you came in, regarding the situation as it may obtain in the Los Angeles area where new standards for exhaust emission have already been put into effect—that is, in the whole State of California. The estimate is that even though one can reduce the amount of effluent to the level stated in the standards, the increase in automotive traffic, in the burning of hydrocarbon fuels, is such that in about 15 years we will be just about back to where we are now.

In other words, unless there are very radical developments in the complete combustion of the hydrocarbon fuels that are used in auto-