observed that the expansion of the basic research curve, even though appearing small on this chart, percentagewise was much more significant with the trend in applied science next in order and development a poor third.

However it does show that the engineering development is far greater in total effort than the combined basic and applied science role. Before production is attained it is even greater than that, because this exhibit is concerned only with R. & D. The bulk of the engineer's effort is not on the chart such as where production tooling and process engineering is involved.

So when one thinks in terms of scientific manpower needs and needs for engineering manpower, one must have much more in mind than for R. & D. alone. It is necessary to look at all the other things the engineer does that the scientist does not do including all the work until the product is put in use and serviced.

Figure 10 is one of those busy charts that I rather deplore. But it does show many things. It shows what you must already know, namely that for the first time defense is going backward in R. & D. It also shows the vast increase in R. & D. for NASA, which we have already referred to, and in which one can see fantastic percentage growth. There is nothing approaching it in the defense picture. But, of course, defense started from a higher level back in 1955 than NASA did. But even so, the chart shows how the political trend has developed for funds for R. & D.

Now if one looks next at the AEC, one sees another dying mammoth. Only recently the huge AEC laboratory operation at Hanford, Washington, has been ordered to turn that vast laboratory facility over to private enterprise. The operation of the facilities is being surrendered by the General Electric Company where it has been an annual cost-plus contract. This has led to the novel result that a nonprofit laboratory company the Battelle Memorial Institute, has accepted a contract to run such an R. & D. group whose annual budget is $36 million, and to take all the risks involved even though it has only one customer.

No other organization would meet the bid on it. They could not afford it. Even the largest corporations in America felt that they could not afford to take on such a vast risk in spite of the obvious advantages.