Afterthoughts

1. I have introduced bits of statistics and attempted to perceive a trend in the numbers. Obviously what I have done is by far insufficient. But I have only wanted to underline the necessity of foreseeing the future situation. The work itself remains to be done. However, statistical investigation, even when most competently made, is quite insufficient. Socio-economic and political considerations are necessary too for the prediction of what industry might be in ten to twenty years time. If ever, the effects of our present deliberation could be felt only then. Not before could physicists leaving university resemble the type (or types) of industrial physicists that we are trying to delineate now. I think, furthermore, that we should also take into account what we, as representatives of society, would like industry to be at that time.

It may therefore also appear to some of us that I, when speaking about industrial physics, must be under some sort of spell of a very idealized image of industry. Perhaps that image does reflect somewhat my hopes, but these hopes are based on something that already does exist in large industrial laboratories. Furthermore, there remains a word to be said about the "Education of Industry for Work with Physicists".

2. There are two typical attitudes of physicists towards physics, which at first sight seem not at all related, but may have a common root. And I think it would be very profitable to try to bring this root out as neatly as possible.

Professor Weisskopf, in his conclusion to the "giornate galileane" said : "So far we have talked physics, now it is about physics. And that is a step backward. To speak about physics is really not what physicists should do." This reveals the modesty of the -- highly capable -- physicist, who wants to stick to his subject and to evade the danger of loosing himself into the jungle of general consideration without consequences. Physicists have the tendency to believe that the product of one's productivity in science with one's proficiency in general consideration is a constant.

Contrasting to this is the attitude that appears in such formulations as : "... one finds that physicists are far from occupying management positions to the extent which might be expected in view of the universality of their training." Here it is the immodesty of physics that shows itself. I do not object to that immodesty, but I do contest the universality of the training of a physicist or of a scientist (clearly I do not here refer merely to the lack of training in managerial techniques). What is common to the two quoted references is precisely the belief that physics or science is something complete, something universal. To avoid confusion, I must make it quite clear that by science I mean natural science.

In my opinion natural science has no such universality. It suffices to follow the development and meaning of the concept of nature in the course of man's evolution. From the point of view of human experience, which after all is at the basis of everything we might know or think, nature is an abstraction. This concept reflects one part of human experience; that part which can be repeated,

reproduced,..., and therefore that part which has been considered as existing outside of man, even though the observer or the experimenter changes. I do not want to go deeper now into these philosophical questions. Neither do I want to give the impression that I am crying for the lost paradise of the unity of man with nature. Man is the product of that lost unity. But we must be aware of the fact there has been a loss. And that awareness may take the form of speaking about science. A more consequent form is the study of the relations between science and society. (I would call this the sociology of science, not the science of science.) The question of science and industry, the subject of our seminar, is but a special aspect of these relations. Problems concerning the moral responsibility of the scientist, which have come into dramatic focus with the advent of nuclear energy, belong to very same complex of questions. We, participants of this seminar, are most certainly aware of the urgency to give serious and consequential thoughts to the problems of the relation of physics and society. I therefore consider that it would be quite natural if here and now we were to envisage forming a division of the new European Physical Society* and to set up a committee for this purpose. This division could perhaps be called "Physics and Society" -- the shortened form of "Division for the Study of the Relations of Physics and Society".

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*Per definition, a division of the European Physical Society unites physicists who are interested in the same aspect or domain of physics. A division may organize conferences on its own and invite others to participate.