

D O C U M E N T S

LEOPOLD INFELD **The Dignity of Science**

For many years a close associate of Albert Einstein, Professor Leopold Infeld is now a member of the Presidium of the Polish Academy of Sciences and head of the Institute of Theoretical Physics at Warsaw-University. This article was first published in the Warsaw journal "Przegląd Kulturalny" in June, 1956.

Two remarks before I turn to my main topic. In the first place the aim of what I am writing here is not criticism for the sake of criticism. Brooding over the errors of the past for the sake of brooding is futile and unnecessary, but only through an open and candid discussion of errors shall we be able to get rid of the bitterness accumulated in the hearts and minds of many of us; only in this way shall we be able to remove the wall standing between many scientists and the Socialist system which we want to build together.

In the second place, what I am writing here is critical. However, it does not mean that I do not appreciate the support owed by Polish science to the Party and to the government in the past period, or that I do not appreciate certain real achievements of our Polish Academy of Sciences which will be my main subject here.

Since the beginning of the Polish Academy of Sciences we have been given as models worthy of following not Copernicus, not Skłodowska-Curie, not Smoluchowski, but Lysenko and Lepie-shinskaya. I am not a biologist and I know about the work of these scientists only from my talks with biologists. Still, it is not necessary to be a biologist to be sceptical with respect to the proposition that soda baths are the fountain of youth. However, it does not matter to me now, at this moment, whether Lysenko was right or wasn't. For the time being I am interested in the methods introduced by him into the world of science, and their echo in Poland.

There is an English word for which there is no equivalent in the Polish language. It is the word "bully." A "bully" is a domestic tyrant, a petty tyrant, a brutal man who imposes his will upon others by means of shouting, and if this is not enough, by means of kicking and beating—literal beating or mental beating . . .

When I was still on the American continent, I read the text of a lecture by Lysenko given by him in 1948 and subsequently published in English. After the lecture a question was put: "What

did the Party think about his views?" Lysenko answered that the Party took a stand for his views and his teachings. During my short stay in Poland in 1949 I got the impression that, after all, in Poland there was a different situation, and that in our country the Lysenko methods were not applied to scientists. Perhaps Professor Dembowski remembers the dinner we had together, during which we discussed this problem, so very painful for me then: the problem of Lysenko. How this problem subsequently rebounded in Polish biology, we are being told in the article by Petruszewicz and Michajlov printed in "Nowe Drogi," in September of last year.

I quote from this article: "What was the final result? Often it was superficiality and generality in our propaganda, sometimes it was dogmatic pronouncement instead of reasoning and proving, generally it was assertiveness. But we went still farther. Not being able always to persuade, we used to have recourse to ordering people about, administrative pressure, closing the columns of periodicals to our opponents, etc." These forms of "bully" pressure, which according to the authors were applied in Poland, do not need any comment. However, the article itself struck me rather unpleasantly. It was written without any doubts whatsoever. At the same time, it seems, to me that there are also correct formulations in this article. I agree entirely with what the authors wrote about the relation of the *Party* to science. We read in this article: "It is also obvious that the Party cannot take any stand on particular scientific issues, let alone decide on scientific issues. It can only contribute to their solution by helping in the organisation of research, by encouraging creative discussions based upon fundamental principals of dialectical materialism."

But the authors do not draw any conclusions from their own premises — one would like to add, in the authors' style, "the only right conclusions." These would be: those who want to decide on behalf of the Party upon the controversies between Lysenko and the Morganists abuse the authority of the Party. Scientific controversies in biology can be solved only by experiment.

A biologist whom I consulted in these matters wrote to me:

"This sad period is about to reach its end. In the Soviet Union and in our country as well, the works of Lysenko and Bosnian and Lepieshinskaya have been rejected after discussion and scientific criticism. But the effects of this period continue to endure to a great extent. And it is our duty as scientists to liquidate them in the most speedy manner. If we take biology as a science, and not as a social function, then there cannot be two biologies: the new one and the formalistic one, the Soviet one and the Western one. There is only biology—the one created by facts taken from reality; the one, based upon honest competently managed scientific research.

"In order to ensure that such a biology develop in our country, we must guarantee to all scientists in Poland a situation in which genuine freedom to research will prevail and scientific dishonesty and careerism will be unable to exist."

I will give another example. As a result of a discussion on the theory of the structure of organic particles that took place in the Soviet Union in the years 1949-1950, the Pauling theory of resonance was condemned as being idealistic.

Pauling is a great chemist, a Nobel Prize winner, one of the pioneers in the application of quantum mechanics in chemistry.

The fact is that at that time—in the early 50 's—the theory of resonance was unknown to Polish chemists because to understand it one must be thoroughly acquainted with wave mechanics. This theory was even more zealously criticised in Poland when critics were told that those parts of the theory unknown to them were allegedly "Machist." A characteristic feature of the critical opinions published in Polish periodicals, as well as in the materials of the conference of chemists held in Bierutowice in 1952, was unfamiliarity with and lack of understanding of the mechanism of the condemned theory. A well-known chemist, who participated in the discussion, said that one might as well abandon the theory of resonance if only because it could not be experimentally demonstrated. Were we to be guided by this approach, we should have to abandon all of contemporary physics.

A colleague of mine who is well acquainted with these problems wrote to me: "The participants in the discussion at the Bierutowice Conference revealed in their opinions their unfamiliarity with the elementary notions of quantum mechanics and their applications. The false views as regards the contemporary state of theory in organic chemistry are still very much alive even today."

I come now to the third problem, the one which is nearest to me personally. It is the subject of the theory of relativity, and the subject of Einstein. Thus, in the Soviet Short Dictionary of Philosophy (Krotki Słownik Filozoficzny), a publication which will remain a monument of shame of the past period, we look in vain for an article with the heading "Einstein." Neither has this name been included in the article "Space and Time" in which, however, we find the names of Butlerov and Fyodorov.

Before I unfold this story, I must add here a very essential note. It is hardly possible to underestimate Soviet science, its gigantic development, in spite of the dark sides about which I am going to speak. The reason for this is that this science is being developed by modest and quiet people such as Wexler, Landau and Tamm, and not by bullies of the Lysenko kind. Now the Twentieth Congress has removed the fetters imposed upon science by those bullies who thought it the proper thing to elevate Soviet science by degrading non-Russian science. Science is international and scientists of all

countries should co-operate with one another for its development.

Our friendship with the Soviet Union is a very important matter from the economic point of view, from the point of view of maintaining peace and from the point of view of the development of science. This is known and recognised in Poland. But a very bad service was rendered to the cause of this friendship by those who have been constantly proclaiming Russian priority for every idea, whether important or not. By this officiousness they have made ridiculous Soviet science, which has gained one of the leading positions in the world even without their shouting. Soviet science was made almost ridiculous in Poland, and a bad service was rendered to the cause of our friendship with the Soviet Union, by those who in our country adopted the loudest opinions, and emphasised them in their own even louder shouting and noise. How many times have I been approached by very young people with the question as to whether Mendeleev and Pavlov were really great scientists! This is the result, and it was symbolised by writing about Butlerov and Fyodorov and not about Einstein in the article on space and time, or by attributing in this dictionary the discovery of the famous equation $E=mc^2$ to Lebyedev and Vavilov and not to Einstein. Incidentally, this dictionary has been published in Polish and it is being used, unfortunately, by all our post-graduate students of sciences.

In the Soviet Union, some philosophers—and it might be more proper to say "quotologists" — have unleashed a storm against the theory of relativity because it is idealistic. How about this theory they argued—and its assertion that there is no difference between the theory of Copernicus and that of Ptolemy? So, according to Einstein, Giordano Bruno and Galileo suffered needlessly from the Inquisition, and therefore Einstein should be classified, as one of the reviews has called him, a "popovshchik" (priest-follower). This argument was repeated many times by the quotologists, but of jail the physicists known to me in the East or in the West there was only one serious supporter of it, and he had his own theory, not recognised by other physicists, modifying the theory of relativity.

What was the echo of these facts in Poland? The articles by quotologists were translated into Polish; generally speaking, people in Poland have been seeing Soviet physics in a crooked mirror. These problems were presented as if the quotologists were right. Great Soviet scientists such as Wexler, Landau, Tamm, have been shouted down by the stentorian voices of the bullies and quotologists.

In 1953, a scientific session was held in Poland on the 410th anniversary of the death of Copernicus. The Academy of Sciences, while preparing this session, had to choose between two paths. It could either invite someone living in Poland who had spent many

years on the relativistic Copernican problem, or it could invite someone who would not say anything contrary to the opinion of the shouters and quotologists. I am anxious to say here explicitly that I accuse the Academy of having chosen this second possibility. Therefore, that solemn session became a travesty of scientific gatherings. Professor Banachiewicz, then our one living astronomer of world fame and renown, did not speak at these meetings.

And now another recollection of that period. I remember a session organised by the Academy in the Sejm building and devoted to the works of Stalin. At one point a physicist took part in the discussion. He explicitly criticised Einstein, Bohr, Dirac as idealistic physicists. Professor Pienkowski, who was seated next to me, whispered in my ear: "Idealistic physics isn't doing badly to have produced people of that calibre." In fact, the attack by that colleague had very little—not to say nothing—in common with the defence of Marxist positions. He took his arguments from the quotologists armed with selected sentences from the works of Marx and Engels. But these great creators of dialectical materialism could not foresee the direction of the development of physics, which turned out to be so different in the Twentieth century from what it had been in the Nineteenth.

The period of ignorance has come to an end, let us hope for ever. The Soviet Union is now going through a period of renaissance in the physical sciences because the fetters that were slowing down their development have been removed. To a great extent public accessibility has been restored to Soviet science. Co-operation with other countries is becoming increasingly wider, increasingly explicit. For me the symbol of Soviet science is not the discovery by Lysenko of the rye in the wheat (or perhaps it was the other way round) but Wexler's synchrotron ten billion electron volts strong—the greatest discovery in scientific technique of our times. Let us hope that this renaissance of science will soon take place in our country . . .

It is high time that the Presidium takes into its own hands the helm of the Academy and ceases to be, as heretofore a rubber stamp of the Secretariat. We should fight for the democratisation of our institution. We should fight against the principle of secrecy in the sciences in all cases where secrecy functions only as a screen for ignorance. We should fight for the principle that Polish science should be under the guidance of scientists, and not of administrators who do not understand its needs. We should fight for educating more personnel especially in those branches which are understaffed. We should fight against insecurity and mendacity of which we still have, unfortunately, too much. We should fight for the rebirth of scientific thought in order that there should be no retreat toward that ignorance on the fringe of which we dwelt for the last five years. We should fight for the dignity and the future of Polish science.