Evgeniĭ L'vovich Feĭnberg (on his eightieth birthday)

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Evgeniĭ L'vovich Feinberg is the "grand old man" of the Department of Theoretical Physics of the Lebedev Physics Institute. This is not merely an indicator of age, but is also a recognition of vital wisdom and excellent human qualities. After his eightieth birthday, he approached the sixtieth anniversary of his career in science. He has published many articles and laid the groundwork for new directions in research, but no less important is his contribution to the creation and upholding of high scientific and ethical principles and a creative atmosphere, features which have always distinguished the Mandel'shtam–Tamm school to which Feĭnberg belonged.

Feinberg begin his career in science even before he entered Moscow State University, and continued there under the direction of I. E. Tamm, one of the brightest and most famous theoretical physicists. The multi-faceted scientific personality of Tamm and his rigorous requirements on the scientific, human and civic qualities of his colleagues always commanded the admiration of Feinberg and were in keeping with his ideas. Complete mutual understanding with his teacher, mutual affection, and an identical passion for science served as the basis for the long friendship between Feinberg and Tamm, and was the fruit of their creative contacts.

Feinberg's wife, V. D. Konen, a well-known musicologist, played a large role in the development of Feinberg's personality. Physics and art, their differences and sameness, became a continuous leitmotif of his understanding of life around him. The unity of logical and intuitive elements of knowledge, which was the subject of in-depth analysis in Feinberg's book "Two Cultures" (M: Nauka, 1992), was characteristic of Feinberg, the creative worker. This can be directly traced in all of Feinberg's publications. They have their own special style where mathematical calculations are accompanied by hypotheses and conjectures which appear at first glance not to be completely justified. But many times they turned out to be true.

Let us begin with one of Feĭnberg's first publications on ionization of atoms in beta decay, where the role of the "shaking up" of an atom due to a rapid change in nuclear charge was noted. This process leads to additional ionization. At first the idea of coherent inelastic processes seemed paradoxical, but it subsequently led to the creation of a whole area of research in particle physics, and served as the basis for the analysis of many processes occurring in the passage of fast particles through a medium.

No less productive was the logical-intuitive approach to physics problems associated with the defense needs of the country during the war. And this was despite the drastic change in subject matter when one had to switch to radio physics and acoustics. The propagation of radio waves along the real (electrically inhomogeneous and not ideally smooth) Earth's surface and the picking out of an information-bearing acoustic signal against a background of noise became basic directions in Feĭnberg's research and led to many practical applications which were widely recognized and which provided him with many happy moments. They frequently arose "at pen point" in solving differential equations, or when he was able to use cleverly and to modify probability theory methods to evaluate correlation characteristics in the process of analytical reduction of the complex to the simple.

And again, particle physics embracing a wide range of subjects, including low-energy neutron physics with the new method of neutron spectroscopy and variations of cosmic rays with the temperature effect for the muon component, and finally, the main direction of his post-war activity, the physics of the interaction of high-energy particles with an analysis of central and peripheral collisions, the radiation of direct photons and many other proposals. The method of "direct examination of the truth" so loved by Feĭnberg is combined here with specific analytical calculations.

But we will not go into an analysis of his publications (especially since this was done earlier in this journal), and recall that the eighty years of his life did not include only the first and last decades of our century, noted for the tempestuous development of science and technology and powerful social upheavals.

It is not surprising that Feinberg, a witness to and par-



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ticipant in these events, was one of the few who sensed the need to analyze the methods of understanding both in science and outside of science. Hence his interest in philosophy, gnosiology, and especially in the role of intuition in knowledge. This analysis led to the need to examine the relation between two cultures, natural sciences and mathematics on the one hand, and humanitarian sciences and art on the other.

Thus, Feinberg has traversed the entire path of science of the twentieth century. His career has reflected the history of science and its problems, both specific (even applied) as well as global and world-view problems. In our opinion, this is the best gift that a scientist could present to himself on his eightieth birthday.

Articles, monographs, textbooks, honorary titles, prizes, and awards have marked his fruitful scientific career. But most important perhaps are the many friends who love and value him. They all wish him health and are always happy to meet him and hold discussions with him.

Translated by C. Gallant