

IGOR EVGEN'EVICH TAMM: *Selected Papers*. Edited by Boris M. Bolotovskii, Victor Ya. Frenkel. Preface by Rudolf Peierls. Berlin *et al.*: Springer, 1991. viii, 325 pp. DM 138.

This is an anthology of important articles written by one of the most interesting and influential physicists of the former Soviet Union, Igor Evgenievich Tamm (1895-1971), professor at the Russian State University in Moscow (1924-1941) and since 1934 director of the theory department of the Lebedev Physical Institute of the Soviet Academy of Sciences in Moscow. Today, Tamm is probably best known for his explanation of the Cherenkov effect (together with I.M. Frank), for which he got the Nobel prize (cf. the photo of the Nobel prize ceremonies in 1958, p. 70), but this volume demonstrates that Tamm made important contributions in many other fields of physics.

Following an introduction by the editors focussing on Tamm's biography which adds many interesting facets to those already mentioned in Dorfman's *DSB* article, ca. 30 German and English articles are reproduced mostly in facsimile in the following 6 parts:

1. electrodynamics (including his 1937 paper together with Frank about the Wawilov-Cherenkow effect, and two other papers about the 'coherent visible radiation of fast electrons passing through matters');

2. quantum mechanics and solid state physics (including papers about molecular light scattering in solid bodies according to Heisenberg's and Pauli's QED of 1930, about electron binding at crystal surfaces, and the famous 1945 paper [together with L. Mandelstam] about the uncertainty relations between energy and time);

3. nuclei, particles, interactions (*inter alia* about exchange forces between neutrons and protons, nuclear magnetic moments, relativistic interactions of elementary particles and the energy spectrum of cascade electrons);

4. fundamental problems (esp. on the theory of spin and an infinite dimensional unitary representation of the Lorentz group for spinors, a paper written together with V.L. Ginzburg in 1947);

5. atomic physics, featuring parts one and three of a three-part paper on the theory of a magnetic thermonuclear reactor written in 1951, omitting the second part which had been written by Tamm's student Andrej D. Sakharov, but including Sakharov's comments about their collaboration since the autumn of 1950 which pioneered the study of magnetic thermostolation of plasma to carry out a controlled thermonuclear reaction still under way in today's research projects for fusion reactors;

6. miscellaneous, collecting a couple of articles with less specialised topics such as historical reflections on Faraday, Einstein, Bohr, Mandelstam, the evolution of quantum theory

and Tamm's speeches about the arms race and disarmament at the Pugwash conferences of 1960 and 1962, where he proposed *inter alia* the installation of 'black boxes', i.e., unmanned seismic stations by a neutral international committee to control nuclear weapons tests, thereby avoiding the problematic on-site inspections which were categorically rejected by the Soviet Union at that time.

It is a pity that all these texts are not annotated by the editors, because many readers would need historical and scientific background information on many of these highly specialized articles.

The complete chronological bibliography of Tamm's writings is a useful appendix, in which all Russian titles of articles are also given in English translation. The reader is advised to use it with caution though, since German and French words and names are often misspelled: 'Block' instead of 'Bloch', 'Lande' instead of 'Landé' (both p. 313), 'Séauc.' instead of 'Séances' (p. 314) etc. A particularly nice feature of this volume are the 10 photographs of Tamm (often together with colleagues as, for instance, with Ehrenfest, Rabi, Kramers, de Kronig and others in Leiden, 1928, in photo I, p. 28 or with Bohr and Artsymovich in Moscow, 1961, in photo VII, p. 212) inserted at the beginning of each section. They very directly convey the image of a very vivacious and humorous, an impression which is confirmed by Peierls in his brief preface to the volume:

I long cherished a photograph I had taken during his talk at the 1930 conference in Odessa, where I met him for the first time. The light in the lecture room, and my little amateur camera did not allow a very short exposure, but it was short enough to show all the audience perfectly sharp. But in Tamm's place there was just a big blur — he moved too fast to be caught in that way.

Certainly, this volume will help to focus more attention on one of the most important Russian physicists of our century.

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