IN MEMORY OF NIKOLAI NIKOLAEVICH BOGOLYUBOV
(08.21.1909—02.13.1992)

Academician Nikolai Nikolaevich Bogolyubov died on February 13, 1992. We have lost a great Russian scientist and a major figure in world science. He was a mathematician, physicist, and master of mechanics. He was the creator and principal editor of this journal for 20 years.

It is difficult to come to terms with the death of Nikolai Nikolaevich with the greatness of spirit that was his own. He leaves us such a wealth of lively impressions from his whole life, which was so rich in deeds and ideas.

Nevertheless, we have not lost him entirely; for he has left us what is most valuable and imperishable — his ideas, methods, and results. Over these, death has no power.

Bogolyubov was born on August 21, 1909 in Nizhnii Novgorod, in the family of an orthodox priest renowned for his works on theology and the history of religion.

Nikolai Nikolaevich began his scientific activity at Kiev, in the seminar of N. N. Krylov, and at the age of 15 published his first scientific paper. The early, purely mathematical investigations already made the young scientist widely known. One of his papers was awarded a prize by the Academy of Sciences of Bologna, and he was awarded a doctorate in mathematics honoris causa (1930). Such was the rapid ascent of the young Bogolyubov.

He soon laid the foundations of a new field of knowledge — nonlinear mechanics, which found numerous applications in different fields of science and technology.

A very great contribution of Bogolyubov to statistical mechanics was his derivation of the equations for the many-particle distribution functions, from which he derived kinetic equations and the equations of hydrodynamics.

In 1950, Bogolyubov was recruited to work at the establishment that was to become the All-Union Research Institute of Power Physics (ARZAMAS-16). There he participated actively in the creation of nuclear weapons, directed the work of mathematicians and calculators, and worked on the problem of controlled thermonuclear fusion.

The ideas and methods that Bogolyubov developed in quantum statistical physics (in particular, the so-called canonical transformation that bears his name) enabled him to create a microscopic theory of superfluidity and superconductivity.

Bogolyubov was a creator of axiomatic quantum field theory, in the framework of which he formulated for the first time a principal postulate of the theory — the principle of causality in the microscopic world. On the basis of this idea, he gave the first rigorous proof of dispersion relations and crossing symmetry, by means of which it was possible to investigate from a unified point of view numerous phenomena in the microscopic world and establish deep connections between them. These studies of him determined for many years an entire direction in theoretical and mathematical physics; new chapters in mathematics were written.

With Bogolyubov's name there is associated a new physical property, which later became known as the "color" of quarks. The introduction of the new quantum number of color was the basis for the construction of quantum chromodynamics, the modern gauge theory of the strong interactions.

The organic fusion of mathematics and physics forces anyone who has studied the works of Bogolyubov to recall the times when the representatives of the exact sciences were called natural philosophers. This is the characteristic mark of Bogolyubov's scientific style: a global estimation of the nature of the problem, determination of its basic solvability, and then, without stopping before difficulties, the creation of an adequate mathematical formalism for its solution.

Bogolyubov can justly be numbered among the Pleiad of great natural scientists that Russia has given to the world.

Nikolai Nikolaevich was buried according to the orthodox rite — the requiem was performed in the church of the Novodevitsa Monastery in the presence of a large crowd of citizens and clergy. He was buried in the same place, in the graveyard of the Monastery.

<div align="right">V. S. Vladimirov and A. A. Logunov</div>

I first saw Professor N. N. Bogolyubov at the Seattle Conference, where he gave lectures on complex variables in more than one dimension and displayed the proofs of the dispersion relations initiated by J. G. Taylor. These were evening lectures. It was quite clear that the man was fully in charge of the complex variable theory at that time. Oppenheimer presided at the meetings. After this display of multifacetedness, Bogolyubov went on to give proofs of the relations which did not imply complex variable theory so much, and we were all left very far behind apart from taking notes. I talked with Bogolyubov later after his lectures. It turned out that he had been brought up in a Jewish school and he was quite proud of this.* I also remember his insistence that I should revisit the USSR and the Academy of Sciences.

I had occasion to renew these conversations when I did visit the USSR and attended the Kiev Conference during 1969 and again during 1976 at the time of the Moscow Conferences. After the Kiev Conference, Bogolyubov succeeded in getting Dr. Shelest appointed as Chairman of the newly emerging Kiev Center, and that gave us a good opportunity to talk about the compatible merits of the ICTP and the Kiev Center. He was kind enough to give me a Tashkent lunch at one of the best restaurants in Moscow. I also had occasion to commend his hospitality on subsequent occasions whenever I visited the Academy of Sciences, for example, during the 1983 meeting, where they very kindly awarded me the Lomonosov Gold Medal.

I had the occasion to talk to Bogolyubov and to share his insights both into the subject as well as outside the subject on many occasions. He visited the Center in Trieste in 1983 and we were able to celebrate his coming by awarding the ICTP Bogolyubov Prize that year. He was accompanied by his good wife, who was very kind, particularly in accepting a jar of pickles which he thought would make his life very much easier. The last time I saw him here, during his visit in 1989, his face

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*N. N. Bogolyubov wrote in his curriculum vitae that he graduated from a Ukrainian village school, which was a parish school before the October Revolution. A short biography of Bogolyubov will appear in the December issue of this Journal.

was pale and he looked near the end.

Personally, I believe none can substitute Bogolyubov in these aspects of mathematics and physics and the superconductivity law, and he deserves full recognition for that. That is why we had decided to give him the Trieste Dirac Medal. Now, of course, the Medal will be given to his widow together with his share of the prize money if she will kindly accept it, together with a jar of pickles in his memory.

I wish comfort to his soul.
Abdus Salam
11 May 1992