

UDC 94(477)

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**THE CORRESPONDENCE BETWEEN S.M. KOZHEVNIKOV AND J.P. DEN  
HARTOG AS A SOURCE FOR THE STUDY OF SCIENTIFIC COLLABORATION  
BETWEEN THE MECHANICIANS  
(TO THE 110TH ANNIVERSARY OF SERGEI KOZHEVNIKOV'S BIRTH)**

*Abstract.* This work continues a series of publications devoted to relations between Ukrainian scientists of the Soviet period and their foreign colleagues. The authors have provided the correspondence between Ukrainian mechanic Sergei Kozhevnikov with a famous American scholar Jacob Pieter Den Hartog. The correspondence between the scientists represents a set of eight letters that have survived to this day and are deposited in the Archival Institute of Vernadsky National Library of Ukraine in the fund number 290.

Kozhevnikov Sergey Nikolaevich (1906-1988) was a Doctor of Engineering Sciences, Professor, Corresponding Member of the Academy of Sciences of the Ukrainian Soviet Socialist Republic. He was the founder of a scientific direction - nonstationary dynamics of machines with real physical properties of units and drives. Jacob Pieter Den Hartog (1901-1989), American scientist-engineer, member of the National Academy of Sciences of the United States, the National Engineering Academy of the United States, a professor of mechanical engineering at the Massachusetts Institute of Technology. One of J.P. Den Hartog's teachers was a famous scientist Stephen P. Timoshenko.

The correspondence between two leading scientists allows to trace the beginning and the development of scientific cooperation between mechanics, to supplement the knowledge about the history of science in Ukraine, to disclose issues of everyday life in the scientific community.

**Ключевые слова:** Sergei Kozhevnikov, Jacob Pieter Den Hartog, Academy of Sciences, correspondence, Ukrainian Soviet Socialist Republic, United States of America, the scientist-mechanic, Stephen P. Timoshenko, Massachusetts Institute of Technology.

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**ЛИСТУВАННЯ С.М. КОЖЕВНИКОВА І Я.П. ДЕН ГАРТОГА  
ЯК ДЖЕРЕЛО ДО ВИВЧЕННЯ НАУКОВОЇ СПІВПРАЦІ ВЧЕНИХ-МЕХАНІКІВ  
(ДО 110-РІЧЧЯ З ДНЯ НАРОДЖЕННЯ СЕРГІЯ КОЖЕВНИКОВА)**

*Анотація.* Дана робота продовжує серію публікацій, присвячених зв'язкам українських вчених радянського періоду з колегами з інших держав. Автори представили листування українського вченого-механіка Сергія Кожевникова з відомим американським вченим Jacob Pieter Den Hartog. Листування між вченими – це комплекс з восьми листів, що збереглися до нашого часу та відклалися у фонді № 290 в Інституті архівознавства Національної бібліотеки України імені В.І. Вернадського Національної академії наук України.

Кожевников Сергей Миколайович (1906-1988) – доктор технічних наук, професор, член-кореспондент Академії наук Української Радянської Соціалістичної Республіки. Він був засновником наукового напрямку – нестационарна динаміка машин з реальними фізичними властивостями ланок і приводу. Якоб Пітер Ден Гартог (1901-1989),

американський вчений-механік, член Національної академії наук Сполучених Штатів Америки, Національної інженерної академії Сполучених Штатів Америки, професор механічної інженерії Массачусетського технологічного інституту. Одним із вчителів Я.П. Ден Гартога був відомий вчений Степан Тимошенко.

Листування двох провідних вчених дозволяє простежити початок та розвиток наукової співпраці вчених-механіків, доповнити знання про історію розвитку науки в Україні, розкрити питання повсякденності у науковому співтоваристві.

**Ключові слова:** Сергій Кожевников, Якоб Пітер Ден Гартог, академія наук, листування, Українська РСР, Сполучені Штати Америки, вчений-механік, Степан Тимошенко, Массачусетський технологічний інститут.

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### **ПЕРЕПИСКА С.Н. КОЖЕВНИКОВА И Я.П. ДЕН ГАРТОГА КАК ИСТОЧНИК К ИЗУЧЕНИЮ НАУЧНОГО СОТРУДНИЧЕСТВА УЧЕНЫХ-МЕХАНИКОВ (К 110-ЛЕТИЮ СО ДНЯ РОЖДЕНИЯ СЕРГЕЯ КОЖЕВНИКОВА)**

**Аннотация.** Данная работа продолжает серию публикаций, посвященных связям украинских ученых советского периода с коллегами из других государств. Авторы представили переписку украинского ученого-механика Сергея Кожевникова с известным американским ученым Jacob Pieter Den Hartog. Переписка между учеными – это комплекс из восьми писем, которые сохранились до нашего времени и отложились в фонде № 290 Института архивоведения Национальной библиотеки Украины имени В.И. Вернадского Национальной академии наук Украины.

Кожевников Сергей Николаевич (1906-1988) – доктор технических наук, профессор, член-корреспондент Академии наук Украинской Советской Социалистической Республики. Он был основателем научного направления – нестационарная динамика машин с реальными физическими свойствами звеньев и привода. Якоб Питер Ден Гартог (1901-1989), американский ученый-механик, член Национальной академии наук Соединенных Штатов Америки, Национальной инженерной академии Соединенных Штатов Америки, профессор механической инженерии Массачусетского технологического института. Одним из учителей Я.П. Ден Гартога был известный ученый Степан Тимошенко.

Переписка двух ведущих ученых позволяет проследить начало и развитие научного сотрудничества ученых-механиков, дополнить знания об истории развития науки в Украине, раскрыть вопрос повседневности в научном сообществе.

**Ключевые слова:** Сергей Кожевников, Якоб Питер Ден Гартог, академия наук, переписка, Украинская ССР, Соединенные Штаты Америки, ученый-механик, Степан Тимошенко, Массачусетский технологический институт.

Ukrainian science has always been an integral part of the world science. Even in the days when Ukraine was a part of the Soviet Union and Soviet ideology dominated on its territories, Ukrainian scientists collaborated with scholars from abroad.

By this work we continue a series of publications devoted to relations between Ukrainian scientists of Soviet-era and their colleagues from other countries, begun in the previous issue of this magazine [9, p. 33-41]. Now we present the correspondence between S.M. Kozhevnikov and a famous American scientist Jacob Peter Den Hartog and dedicate this work to the 110<sup>th</sup> anniversary of the Ukrainian scientist and to paying tribute to his memory.

Kozhevnikov Sergey Mykolayovych (1906-1988) was a Doctor of Engineering sciences (1940), Professor (1942), member of the Academy of Sciences of the Ukrainian Soviet Socialist

Republic (1951). His researches were focused on the problems of structure and kinematics of mechanisms, biomechanics, heavy hydraulic machines, mechanization and automation of metallurgical production, epicyclic and cam gears synthesis and improvement of heavy mining and metallurgical machinery. Sergey Kozhevnikov was the founder of scientific direction - nonstationary dynamics of machines with real physical properties and drive units. He created and brought into production a range of highly efficient versatile machines for pipes cold rolling with a complex of new mechanisms. [1, p. 602].

S.M. Kozhevnikov was born on September 23, 1906 in Ekaterinoslav (now - Dnipro, Ukraine). There in 1917 he graduated from a classical gymnasium. In 1926-1930 he studied at the Moscow Industrial and Pedagogical Institute and received qualification of engineer and teacher. In 1930-1934 S.M. Kozhevnikov was a postgraduate student at the Department of Engineering Mechanics, an assistant and later a head of the laboratory of machine parts and strength of materials in this institution.

In 1932-1937 he held the post of the fellow of Experimental Research Institute of Machine Tools in Moscow. Also from 1934 to 1943 S.M. Kozhevnikov was engaged in teaching, worked as an associate professor, head of the Department of the Theory of Mechanisms in Moscow Aviation Institute. During World War II, along with the Institute, he was evacuated to Kazakhstan, where in 1943-1944 years he worked as Professor, Head of Department of the Theory of Mechanisms of Moscow Aviation Technological Institute. From 1944 to 1960 S. M. Kozhevnikov was a Professor and Head of Department of Metallurgical Equipment Automation and the Theory of Mechanisms in Dnepropetrovsk Metallurgical Institute. At the same time during 1953-1962 he hold the position of the Head of the department at the Institute of Ferrous Metallurgy of Academy of Sciences of the Ukrainian Soviet Socialist Republic. From 1962 to 1968 he worked as a professor and head of the department of Theoretical Mechanics and the Theory of Machines and Mechanisms in Kyiv Institute of Civil Aviation.

S.M. Kozhevnikov not only taught in local institutions of higher education - from 1956 to 1963 he also taught a course in Freiberg University of Mining and Technology (The Technische Universität Bergakademie Freiberg) (Freiberg, Germany), personally took part in international conferences, exhibitions and scientific exchanges.

In 1968-1975 S.M. Kozhevnikov was the Head of the Department of Materials Resistance and the Professor of the Department of Mechanics and the Theory of Machines and Mechanisms in Ukrainian Agricultural Academy. Simultaneously, from 1970 to 1978 he directed the Department of the Theory of Machines and Mechanisms in the Institute of Geotechnical Mechanics of the NAS of the USSR. And during 1978-1988 years he was the Head of the Department of the Theory of Machines and Mechanisms, Senior Fellow, scientific consultant in the Institute of Mechanics of the NAS of the USSR.

The scientist died on September 29, 1988 in Kyiv and was buried in the Baikove cemetery. A bust was established on his grave [5]. There are memoirs about this scientist left by his students and colleagues. Some articles about S. Kozhevnikov were published during his lifetime, and some were published after the death of this outstanding person [3, p. 230-231; 4].

In 2015 the Archival Institute of Vernadsky established a specific fund devoted to S.M. Kozhevnikov (fund № 290). It includes scientific works of S. Kozhevnikov and a variety of materials that shed light on his life and professional way. The total amount of cases formed by the archivists accounts for 518 and they are arranged into three thematic blocks: "Scientific works, work materials and materials collected to them", "biographical documents, documents on activity and photo documents" and "epistolary heritage".

Overall archival heritage of S.M. Kozhevnikov allows to trace his life and scientific way through the prism of diverse sources. In particular, archival documents contain scientific correspondence with colleagues, among recipients and correspondents of which were fellow researchers from Germany – J. Muller, W. Rossner, R. Steiwand, R. Steinhardt, H. Tersch, G. Trankner, W. Stuhler, G. Juretzek; from the United States – J.P. D. Hartog, P. Nielsen, H. Rothbart,

E. Crossley, W.L. Starkey, S. Cvikevich; from Hungary – F. Olah, Z. Terplan, I. Saly; from Romania – D. Manzheron, F. Dudih and others.

One of the most famous American scientists in mechanics, who maintained friendly relations with Ukrainian researcher Kozhevnikov was Jacob Pieter Den Hartog. The correspondence between the scientists, a set of eight letters that have survived to this day, is deposited in the Archival Institute of the National Library of Ukraine named after V.I. Vernadsky in the above-mentioned personnel fund.

Jacob Pieter Den Hartog (23.07.1901 – 17.03.1989), American scientist-engineer, member of the National Academy of Sciences of the United States, the National Engineering Academy of the United States, a professor of mechanical engineering at the Massachusetts Institute of Technology.

He received higher education at the Technical University of Delft (1919-1924). After graduating the University, he immigrated to the USA. There he began his career in Westinghouse research laboratory in East Pittsburgh under the guidance of the famous Stephen P. Timoshenko (1924-1930). At the same time Den Hartog had been studying mathematics at the University of Pittsburgh. He received his Ph.D. degree from the University of Pittsburgh in 1929.

In 1932 Den Hartog arrived at Harvard University and started his academic career (1932-1942). During these years Den Hartog continued his active involvement with the Applied Mechanics Division of ASME (American Society of Mechanical Engineers) having been the division chairman (1940-1941).

During the Second World War, he volunteered to serve in the US Navy, was engaged in the problems of vibration in shipbuilding (1941-1945).

Den Hartog was the professor of mechanical engineering (1945-1967) head of the Department of Mechanical Engineering (1954-1958) at Massachusetts Institute of Technology.

In his research work Den Hartog made major contributions to the problems of nonlinear vibrations. Coulomb friction damping, galloping of electrical transmission lines, vibrations of electrical machinery, dynamic vibration absorbers, and torsional vibration dampers.

Den Hartog was a honorary member of American Society of Mechanical Engineers and Japan Society of Mechanical Engineers; member of National Academy of Sciences and National Academy of Engineering; fellow of the British Institution of Mechanical Engineers. From The ASME he received the Timoshenko medal, Lhc Richards medal, the Worcester Reed Warner medal, and The ASME medal. The American Society of Engineering Education awarded him the Lammc medal and the Acoustical Society of America awarded him the Trent-Crede medal [8].

The correspondence between scientists includes documents dated from 1958 to 1966 years. S.M. Kozhevnikov was an initiator of the correspondence since in his first letter dated the 12<sup>th</sup> of January, 1958 he proposed to his American colleague setting up of scientific cooperation between them. Establishing of direct contact, according to S.M. Kozhevnikov, was to promote creative collaboration between research teams, which worked in a related field of science. In the first letter S. Kozhevnikov proposed his own scientific production: a textbook “*Теория механизмов и машин*” (The Theory of Mechanisms and Machines) and the reference book “*Элементы механизмов*” (Mechanisms Elements) and expressed hope for the establishment of close and fruitful cooperation [6, sh. 5].

In his reply from January 30, 1958 J.P. Hartog confirmed the receipt of the above mentioned letter and two books and expressed desire to establish scientific relations. J.P. Hartog also hoped to have a personal meeting with Kozhevnikov at the next conference in Italy or in Soviet Union, which took place in 1960. At the end of the letter the American scholar mentioned already existing scientific collaboration between the United States and the Soviet Union, about American students who were training in the USSR; and his son, who in tandem with USSR representatives, conducted a research at an Antarctic station in terms of International Geophysical Year (IGY) [7, sh. 1].

S. Kozhevnikov's letter from the 8<sup>th</sup> of March 1962 shows that the contacts between the scientists had become traditional. In particular, in 1961 their personal meeting took place in Kyiv during participation in the International Symposium on nonlinear oscillations. They also continued the exchange of literature and discussed the possibilities of further meetings in France, Italy, Switzerland, etc. [6, sh. 9-10].

In a letter from April 2, 1962 Hartog discussed his possible visit to the USSR in connection to the cooperation establishment between American and Soviet Academies of Sciences. Moreover, he expressed gratitude for delivered gifts and warm welcome in Kyiv in 1961 [7, sh. 3].

Two letters from 24 October 1962, in our view, were received at the same package and have the same informational load. Thus, in a handwritten letter (Letter 5) from October 24, 1962 we find out that the second meeting of scientists took place in Kyiv. J.P. Hartog and his wife Elizabeth thanked Ukrainian colleagues and S.M. Kozhevnikov's family for warm welcome on Ukrainian soil [7, sh. 5-5zv]. The following letter (Letter 6) substantially complements the idea of the events related to the visit of J. Hartog's family to the USSR in terms of cooperation between Academies of Science. This letter thematically and chronologically informs about event of official and unofficial nature which took place from September, 3 to September, 15, 1962 and the participation of J.P. D. Hartog in them together with leading Ukrainian scientists (V.A Kononenko G.M Savin, S. Sorensen, Y. Mitropolskiy, G.S. Pisarenko, M.G. Gorchakov), Georgian (K.S. Zavriyev, D.S. Tavkhelidze, J. Mikeladze, M. Chikovani) and Russian (I.I. Artobolevskiy, G.U. Janelidze, A.I. Lurie, S. Pinehin, K.V. Frolov). During his visit to the USSR John P. D. Hartoh lectured in Moscow for researchers, teachers and students of the Institute of Mechanical Engineering, Moscow State University, Bauman Moscow Higher Technical School; Leningrad (now – St. Petersburg) – Leningrad Polytechnic Institute, Leningrad metal factory; Tbilisi - Georgian Academy of Sciences, Georgian State Polytechnic Institute; Kyiv – Institute of Electrical Engineering, Mathematics and Mechanics of the Academy of Sciences of the Ukrainian SSR, Kyiv Polytechnic Institute, Kyiv State University, E.O. Paton State Research Institute of welding [2, sh. 76-103].

The letter dated the 19<sup>th</sup> August 1965 (Letter 7) contains information on the literature exchange between the scientists and conveys the impression of J. Hartog's wife, Elizabeth, on their visit to Kyiv in 1962 J. This visit the Hartogs is memorized for the warm meeting, boat tours on Desna, S.M. Kozhevnikov's elegant manners and wonderful vacation with his family [7, sh. 22].

The letter from the 14<sup>th</sup> of June 1966 (Letter 8) to SM Kozhevnikov contains personal requests for help Hartog's friend and neighbor – Alva Morrison, who was going to visit the USSR as a delegation member Museum of Fine Arts to get acquainted with works and exhibition of museums in Kyiv, Leningrad, Moscow, Tbilisi and other cities. J.P. D Hartog stated that apart from the interest in art, his friend expressed the desire to see people in private and asked to meet his friend as warmly as Hartog and his wife were welcomed [7, sh. 23].

Thus, the investigated correspondence between two leading scientists allows to trace the beginning and development of scientific cooperation between mechanicians, to supplement the knowledge of the history of science in Ukraine, to expose issues of everyday life in the scientific community.

Provided letters contain a considerable number of grammatical errors. Most often they occur in writing of the names of some scientists. The clarifications about the majority of such cases are provided in the comments. In current work we provide authentic texts of eight letters. All of them are written in English. We introduce the Ukrainian scientist in the article preamble as Kozhevnikov, but in the letters several versions of her name spelling could be found (Koshevnikov, Kovshevnikov).

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**Letter 1**

USA

Prof. Jacob Pieter Den Hartog  
Massachusetts Institute of Technology  
Department of Mechanical Engineering  
Cambridge 39, Massachusetts.

Dear Prof. Den Hartog!

I am very sorry that during the visit of the Russian Professors metallurgists of the MIT<sup>1</sup> I had no opportunity of making my acquaintance with you personally. According to the character of the educational and scientific work we have many interests in common. I believe therefore that it would be useful to establish a contact between our schools in the field of exchanging of training appliances and scientific works

With the purpose of beginning such an exchange i am sending you my text-book on “The theory of machines and mechanisms”<sup>2</sup> and a reference book for constructors “Elements of Mechanisms”<sup>3</sup>. I hope you will send me your books on the theory of vibrations and the theory of mechanisms.

My assistants and I are working in the field of machine dynamites, mainly heavy, such as metallurgical. That’s why your works in the field of dynamics in particular nonlinear systems are of special interest for me.

I shall hope that my address to you will be the beginning of establishing as close and fruitful a contact among the mechanics as had been established among some Russian metallurgists and Professors from the MIT John Chipman<sup>4</sup>, Moris Koen<sup>5</sup> and others.

Yours sincerely

S. Koshevnikov

January 12, 1958

*AI NLU, found 290, description 3, case no. 14, sh. 5.*

## Letter 2

Professor Sergei N. Koshevnikov  
Dnepropetrovsk

Dear Professor Koshevnikov:

I just received your letter dated January twelfth and postmarked January twenty-second, which is very quick indeed. Also your two books, which were mailed on January nineteenth, arrived with the same post. I thank you very much for the books, and in addition, I would like to tell you that I am even more satisfied with the fact that normal relations with our colleagues in Russia are being resumed. My last correspondence with colleagues in Russia was in 1946, when we also exchanged books.

I am sending you by separate mail a copy of the fourth edition of my book «Mechanical Vibrations»<sup>6</sup>. It will go by ship because the postage by airmail would be prohibitively high, and I expect it will reach you in a month or six weeks.

I regret not having had the opportunity of meeting you on your last visit here. Maybe we may meet at the next International Congress for Applied Mechanics to be held in Stresa, Italy, in August 1960, or maybe we might meet in Russia. It has been my hope for many years to be able to visit your country, and who knows but that it may become possible during the next few years.

Two of the best students in our Department are now applying for a year's work in one of the research institutes or universities in Russia and soon we hope to see some of your students here. My son is now with the International Geophysical Year<sup>7</sup> at a station on the continent of Antarctica, where there is a Russian scientist attached to the American group, so that he has some contact as well.

With best wishes for the future,  
Yours sincerely,

signature (J.P. Den Hartog)

*AINLU, found 290, description 3, case no. 99, sh. 1.*

## Letter 3

Dear Professor Den Hartog,

I have the pleasure to inform You, though partially, about the work which i manage, in spite of my being very busy, to prepare for publishing. Some days ago i posted to you my monography «Dynamics of Machines with Elastic Links»<sup>8</sup> in which i, to a certain degree, resume the mathematic description of heavy machines. The books being sent, I received the first prints of my report at the First Conference of Mechanics which was held in Moscow in 1960<sup>9</sup> at which You were present. I am sending to You a copy of this report.

The method of usage of analog computers for research of heavy machines (that was done by me and my assistants) is developed satisfactorily now and in the nearest future I am going to begin writing a monography on this question. Surely, When writing it I have to take into consideration the experiments of other researchers. In this aspect You could be really helpful to me sending to me copies of the articles of analog computation of dynamic processes in machines; I thank You beforehand.

With great pleasure i remember our nice meeting in Kiev at the Symposium concerning the non-linear oscillations<sup>10</sup>.

I would be very pleased to have a new meeting with You. Don't You think to visit the USSR once again? It might be possible for me to plan my tour abroad so that I could meet You in some place, like Prance, Italy, Switzerland or in any other place. Write me, please, about Your voyage plans and I'll take measures to organize our meeting.

Of course, such a meeting is very difficult in time and space, but it is quite possible. When I was in the USA, You were in Britain, When You were in the USSR, I was in India, But, if each of us knows the plan of the voyages, then the possibility of our meeting becomes rather real.

As for me, it would be of great interest to discuss with You a number of problems of the dynamics of machines, and exceptionally with You, because, besides the quality of deep theoretical analyses You have a quality of practical engineering side, It's not a flattery, but my sincere conviction. People say, that I have the same character.

My friend academician Ivan Fedorchenko<sup>11</sup> is so kind that he will give You this letter and a souvenir.

Sincerely Yours  
S.N. Kozhevnikov  
Professor, Doctor  
Corresponding Member  
of the Academy of Sciences  
of the Ukrainian SSR.

Dnepropetrovsk,  
March 8, 1962.

*AI NLU, found 290, description 3, case no. 14, sh. 9-10.*

#### Letter 4

April 2, 1962

Professor Dr. S.N. Kozhevnikov  
Dnepropetrovsk, USSR

Dear Professor Kozhevnikov:

I thank you for the kind letter and the beautiful gift you sent me by the courtesy of Dr. [I. M.] Fedorchenko, who was here last week. My plans for the coming summer are not fixed yet, but there is a possibility of a visit to the Soviet Union in August and September. Correspondence between the two Academies of Science is underway, but not completed. The program is being worked on by Professor [V. O.] Kononenko<sup>12</sup> in Moscow, who may be able to tell you more than I know now. In any case, as soon as something more definite is known, I shall write you. On this visit (if it occurs) my wife probably will be with me and it would be nice to meet you and also Mrs. Kozhevnikov<sup>13</sup>, of whom I have the most pleasant memories on occasion of the dinner you gave us in Kiev.

Yours very sincerely,  
signature (J.P. Den Hartog)

*AI NLU, found 290, description 3, case no. 99, sh. 3.*

#### Letter 5

Barnes Hill Rd  
Concord Mass  
October 24 – 1962

Dear Prof and Mrs. Kozhevnikov

We still remember with great pleasure our lovely afternoon we spend in your company in Kiev. We enjoyed in greatly and shall never forget. I enclose a few prints. Please give one to Svetlana Petrovna Petrenko with our very best regards. She is certainly a talented and lovely girl. The other 3 are for Mr. Bulovsky<sup>14</sup>, our guide who works at the electrical department I believe.



Please give him our very best regard also. We enjoyed his company very much. We hope you both will have a good winter and that some day we will meet again.

Our very best to both of you from both of us.

Sincerely Yours  
Jacob and Elisabeth  
Den Hartog.

*AINLU, found 290, description 3, case no. 99, sh. 5-53в.*

### Letter 6<sup>15</sup>

Sergei Nikolaevich Kozhevnikov with best regard, friendly greetings and many thanks for the cordial reception in Kiev.

Den Hartog.

#### Report on a Trip to the USSR sponsored by the National Academy of Sciences of the U.S.A.

by J. P. Den Hartog

Day by Day Narrative

Mrs. Den Hartog and I arrived in Moscow (by air from Vienna) on Monday evening **September 3**, 1962 and were met at the airport by Professor V.O. Kononenko and Mr. K. V. Frolov<sup>16</sup> of the Institute Machinovedeniia in Moscow.

The next day, September 4 was spent in going over the lecture schedule with Kononenko and Frolov, who were going to translate. That evening we were entertained privately at the apartment of Academician I. I. Artobolevsky<sup>17</sup> (ul. Gorkova No. 9, apt. 36) in the presence of some ten of his old friends colleagues at the Institute or University and two opera singers (A.B. Feona and I.A. Petrov) and their wives

On **September 5**, I visited the Institute Machinovedeniia<sup>18</sup> on 4 ul. Griboyedova, where I gave a two hour lecture in English with sentence by sentence translation by Prof. Kononenko. The chairman of that meeting was the Vice-director of the Institute, Prof. Pinyegia (Sergei Vasilivich)<sup>19</sup>, in the absence in England of the director Blagonravov<sup>20</sup>. Other members of the Institute present during the receptions before and after the lecture were Profs. Serensen<sup>21</sup>, Kononenko, and Iorish and the scientific secretary Sokolov<sup>22</sup>. The lecture was attended by some 150 people, partly from the host Institute and partly from other institutes in town as well as from the Baumann polytechnic<sup>23</sup>. The evening of that day, September 5 we went to the Bolshoi Theatre (Rimsky-Korsakov's «Csar's Bride») and immediately afterward took the night pullman (the Red Arrow: Krasnaya Stryela) to Leningrad.

On arrival in Leningrad early on **September 6** we were met at the railroad station by Professor Lurie' (Anatol)<sup>24</sup> and Djanelidze (Sergei)<sup>25</sup> of the Leningrad Polytechnic and by Mr. Nicolas Poliachov<sup>26</sup> of the Academy of Science, who had the job of smoothening our Leningrad visit, which he did admirably. That morning we visited the «Leningradski Metallicheskie Zavod»<sup>27</sup>, which is the factory where large steam turbines are made. I was shown the manufacturing plant as well as the technical laboratories and had a technical conference with their engineers: Alex Sergeiwich Zilberman<sup>28</sup>, chief of all laboratories Arkady Zinoviewich Shemtov<sup>29</sup>, in charge of vibration laboratory, and a visitor named Olympiev<sup>30</sup> of the State Research Institute for Turbines and Boilers, Leningrad.

That afternoon we took an excursion to Peterhof outside the city and in the evening saw a ballet performance: three ballets by Stravinsky, whose 80th birthday was thus being celebrated.

The next day, **September 7**, I gave a two hour lecture at the Leningrad Polytechnic, attended by some 150 people, Professor Djanelidze chairman and Mr. Frolov, translator. There was lively

discussion afterwards, some of it directly in English. In the evening Professors Luri and Djanelidze and their wives entertained us at dinner in a restaurant (with dancing and a good orchestra). Other guests at that party were Nicolas Poliachov, dean of engineering at the University of Leningrad and David Merkin<sup>31</sup>, professor at the Polytechnic. Like in Cambridge between Harvard and M.I.T. the professors of the University and the Polytechnic in Leningrad also meet when some foreign visitor in town offers a suitable occasion.

The next day, Saturday, **September 8**, the engineers of the turbine factory came to our hotel at eight in the morning and we had a two hour conference discussing various technical aspects, in which practical information was evenly exchanged. Later in the morning Professors Lurie, Djanelidze and their wives took us on a tour through the Hermitage museum, which fully came up to its marvelous reputation. We were accompanied by a lady guide who knew every object in the place and answered questions on the history and background of every room, educated specially for that purpose.

In the afternoon, we flew by jet (Tupolov) via Kiev to Tbilisi, crossing the Caucasus mountains an hour before sunset in perfectly clear weather with gorgeous views. At the airport we were met by:

Prof. David Sergeiwich Tavchelidze<sup>32</sup> of the Polytechnic: mechanisms with his daughter of 21 and son of 15, both fluent in English.

Prof. Ierab Mikeladze<sup>33</sup> of the Polytechnic: structural engineering.

Engr. Nicolas Chikovani, Scientific Secretary of the Georgia Academy of Sc. All of them brought us to our hotel in two cars (the "Tbilisi" Hotel on the main street, ul. Rustaveli named after a classical Georgian poet of the 16th century). We were in the South, the street scene was almost Spanish; everybody in town enjoying a Saturday night walk. We joined the procession for a while and then had shashlik with Georgian wine in a cellar restaurant.

On Sunday, **September 9** we were first taken to the Georgian National Museum and then on an automobile excursion some 40 miles north of town to the old capital of Georgia (Mtsketa) with a 12th century church containing the graves of the independent Georgian kings until 1802, and to a nearby 5th century ruined abbey chapel up a hill, which was said to be the oldest building, Christian or otherwise, in the Soviet Union. The Georgians are very proud of their history, their separate language and separate alphabet and were anxious to show them to us. Sunday evening we went as guests to a dinner at the summer house (dacha) of Professor Tavkhelidze with some 16 people including 5 members of his family. It struck me that while the elders could hardly speak English, the two children of the host, 21 and 16, were quite fluent, although this was the first time in their lives that they had a chance of speaking it to someone who understood neither Russian nor Georgian.

On Monday, **September 10**, we saw the Georgian State Institute of Building Engineering (Mr. Chikovani) and gave a two-hour lecture at the Polytechnic, attended by some 100 people, chaired by Prof. Kiriak Samsonowich Zavriev<sup>34</sup>, Member of the Georgian Academy of Science and interpreted by Frolov. That evening we were taken on an excursion first to the edge of the city to an artificial lake, recently dammed for irrigation and water supply purposes, in which we had a swim, and then to dinner in the restaurant on the top of Mount Mtatsminda, a 1500 ft. mountain in the center of the city with a magnificent view all around.

The next morning, **September 11**, we took a jet to Kiev where we were met at the airport by Sviatoslav Kozubowski<sup>35</sup>, who was appointed by the Ukrainian Academy of Sciences to arrange and smooth our Kiev visit. There was a reception at the presidium of the Ukrainian Academy at which we met Academicians Savin<sup>36</sup>, Serensen (permanently in Moscow, but here for two days specially for our visit) Mitropolski<sup>37</sup>, Kovzhevnikov and Pisarenko<sup>38</sup>, scientific secretary.

The rest of the day we saw Kiev and in the evening attended a performance of the Ukrainian patriotic opera "Mazeppa".

On **September 12**, we visited the Institute of Electrotechnics of the Ukrainian Academy where Kozubowski works, in which they did control engineering. This was followed by a two hour

lecture in the large auditorium of the Ukrainian Academy, attended by some 100 people, chaired by Academician Savin and translated by Frolov.

On **September 13**, we visited the computing center of the University of Kiev, Dr. M.G. Gortchakov<sup>39</sup>, where we saw some analog computers for special purposes, a digital computer with vacuum tubes capable of 100 additions per second and a large Bush type mechanical element computer hooked up with electronic circuits after the mechanical elements. This machine was built in 1956. We then paid a visit to the Paton Welding Research Institute of the State, where we were shown some welding machines and discussed brittle failures in welded steel structures. As everywhere in Russia their familiarity with the U.S. technical literature is astounding. After that we had a boat ride on the Dnieper and Desna rivers in two motor boats carrying four passengers each, belonging to the Academy of Science and at the disposal of their members, taking off from the Academy yacht pier! In the evening there was a lively dinner party with the ladies at a restaurant, from which we were taken directly to the station to board the Pullman train to Moscow.

On Friday, **September 14** we arrived at the Kiev station in Moscow, and in the afternoon I gave my fifth and last two-hour lecture at the University of Moscow in a large auditorium in the skyscraper building. It was attended by some 200 people, chaired as well as translated by Professor Kononenko. There was considerable discussion. In the evening we were taken to a private dinner at the house of Professor Kononenko in a Northern suburb of the city.

The last day, **September 15**, was spent in sightseeing and shopping in Moscow and in the late afternoon we were conducted to the airport and seen to our plane (for Amsterdam and New York) by Kononenko and Frolov.

### **Comments and Observations**

1. This visit was one of the scheduled exchanges between the Academies of Science of USSR and USA. It was more or less the return for a visit by Professor Kononenko to the USA in October, 1961, and it had been in preparation for 2 1/2 years. A program for the trip extending for 30 days (August 17 – September 15) was agreed on last June and Russian visas issued us on that basis, but this arrangement was upset by a telegram from the Russians, to me on my first stop in Europe, changing the conditions of the visit from what was previously agreed. I declined to accept that by telegram and simultaneous letter. That letter, sent by airmail from Amsterdam to Moscow took 17 days (between the Amsterdam stamped date and the Moscow stamped date on the envelope). This slowness of communication almost cancelled the visit, but it was carried out at the last moment in a shortened version (September 3 – September 15). After personal contact was established on arrival in Moscow, the Russians did everything to make the visit a success and I am very satisfied with the treatment received and with the cordial and friendly relations we had with everyone concerned.

2. A matter that has been in a state of negotiation for more than two years is an exchange between Mr. Konstantin Frolov, the able interpreter of my trip, with an American of comparable standing. Our Mr. Farms Lee is preparing himself language wise for such an eventuality at this time. The latest proposal was that Frolov was to come to M.I.T. for a year starting in September '62 and that Parmelee was to go to Moscow in September '63.

I was told that Frolov's visit was just about all arranged and approved when two months ago the Institute Machinovedenii (where he works) was transferred from the "Academy of Science" to the "Committee for Automation and Machine technique under the Soviet Ministry USSR." The personnel and the director (Blagonravov) remain the same; the brass nameplate on the door was changed and so was the budget. This budget was said to be larger than previously, but it did not contain an item for exchange of scientists with other countries. Therefore, the internal negotiations have to start again on another tack, and Frolov still hopes to come to us in the future. Parmelee is continuing to study the language.

3. I did not see anything that was remotely connected with any modern project of space engineering or nuclear technology and did not expect to.

What I did see and what was shown me was creditable but not in advance of the West. This conclusion covers the turbine factory, the welding research institute, the control technique laboratories and most particularly the computing center.

The Russians are avid readers of our technical literature which is universally better known and better digested there than it is with us. They have libraries with a great many technical and scientific periodicals from both sides of the political fence in almost any institute and these libraries are full of people who read it all. Although there are many educated ones among them who understand and read only Russian, the majority of our colleagues there can read one or more Western languages, which opens the literature to them. Unfortunately, the knowledge of Russian with us is much more rare. The only saving grace of this situation is that I myself don't have time enough to read one tenth of what I would like to read in English, so that my total ignorance of Russian, although frustrating during a visit, perhaps is not an unmitigated disaster.

*AI NLU, found 290, description 3, case no. 99, sh. 8-14.*

### Letter 7

19 August 1965

Dear Sergei Nikolaewich

I thank you very much for sending me your latest 1965 book on Mechanics, and congratulate you sincerely for such a large work done again. Your industry and output are truly remarkable.

My wife and I remember with great pleasure our last meeting in Kiev where you entertained us hospitably. The boat ride on the Desna River was the high point for me and my wife remember you not only as a very charming gentlemen, but as an accomplished dancer.

I continue to work here in mechanical engineering, much so a consultant for various industries, but my writing also are over, so that I can not send you any new book of mine. With look wisher.

Your sincerely & cordially

signature Hartog

Yakob Martenovych

*AI NLU, found 290, description 3, case no. 99, sh. 22.*

### Letter 8

MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
DEPARTMENT OF MECHANICAL ENGINEERING  
CAMBRIDGE, MASSACHUSETTS 02139

J.P. DEN HARTOG

Professor of Mechanical Engineering

June 14, 1966

Dear Professor Kovshevnikov:

I am writing to let you know that my good personal friend and neighbor Alva Morrison will be visiting the Soviet Union as one of a group of about 20 people, who are members of our Boston Museum of Fine Arts to see the museums and other art works of the Soviet Union. The tour will extend all the way to Samarkand and Novosibirsk, and the European dates are:

Leningrad	June 26-30
Kiev	July 3-4-5
Tbilisi	July 8-9-10

Moscow

July 15-19

The tour is organized by Intourist and no names of hotels are known at this time. Besides being interested in art my friend also would like to have some personal contact with people. Anything that you can do for him will be much appreciated, as much as the warm feeling of gratitude my wife and I have for the wonderful hospitality you have given us on our visit to the U.S.S.R. Many thanks again.

Yours sincerely,  
signature of J.P. Den Hartog

JPDH:lw

Professor Lurie, Leningrad  
Professor Kovshevnikov, Kiev  
Professor Tavchelidze, Tbilisi  
Professor Kononenko, Moscow  
Mr. Morrison, Concord, Massachusetts

*AINLU, found 290, description 3, case no. 99, sh. 23.*

**Comments:**

<sup>1</sup>MIT – Massachusetts Institute of Technology.

<sup>2</sup>This refers to the publication: Kozhevnikov S. *Teoriya mekhanizmov i mashin: Uchebnoe posobie dlya vuzov* [Theory of mechanisms and machines: Textbook for high schools] / S. Kozhevnikov. – 3rd ed., revised and expanded. – Moscow: Mashgiz, 1954. – 643 p.

<sup>3</sup>This refers to the publication: Kozhevnikov S. *Elementy mekhanizmov* [Elements of mechanisms] / S. Kozhevnikov, Ya. Esipenko, Ya. Raskin. – Moscow: Oborongiz, 1956. – 1078 p.

<sup>4</sup>John Chipman (25.04.1897 – 14.05.1983) – american physical chemist and metallurgist who was instrumental in applying the principles of physical chemistry to constituents in liquid metals and to the chemical reactions between slag and liquid iron that are important in the production of pig iron and steel.

<sup>5</sup>Morris Cohen (27.11.1911 – 27.05.2005) – american metallurgist, who spent his entire career affiliated with MIT. He graduated from his undergraduate degree in 1933, receiving his doctorate three years later, and was appointed assistant professor of metallurgy in 1937. He was appointed Professor of Physical Metallurgy in 1946, and an Institute Professor in 1975. He took emeritus status in 1982.

<sup>6</sup>Den Hartog, J.P. *Mechanical Vibrations*, 1956, forth ed.

<sup>7</sup>International Geophysical Year (IGY) – comprehensive studies of global geophysical processes in the Earth crust, atmosphere and the World Ocean by a single program and methodology. Conducted from July 1, 1957 to December 31, 1958 with the participation of 67 countries, including Ukraine.

<sup>8</sup>This refers to the monograph: Kozhevnikov S. *Dinamika mashin s uprugimi zven'yami* [Dynamics of machines with elastic links] / S. Kozhevnikov. – Kyiv: Publishing Academy of Sciences Ukrainian SSR, 1961. – 160 p.

<sup>9</sup>First All-Union Congress of Theoretical and Applied Mechanics held in Moscow from 27 January to 3 February 1960.

<sup>10</sup>International Symposium on nonlinear oscillations was held in Kiev from 12 to 18 September 1961.

<sup>11</sup>Fedorchenko Ivan Mykhaylovych (31.10.1909 – 27.12.1997) – ukrainian scientist in the field of materials science, powder metallurgy and special alloys, academician of the Academy of Sciences of the Ukrainian SSR (1961).

<sup>12</sup>Viktor Kononenko (11.09.1918 – 29.07.1975) – scientist, engineer, investigated the spatial nonlinear oscillations of solids, academician of the Academy of Sciences of the Ukrainian SSR (1964).

<sup>13</sup>Ostrov's'ka Lyudmyla Kostyantynivna (1913-2006) – wife of S. Kozhevnikov, ukrainian scientist-biochemist and plant physiologist, Doctor of Science (1959), Professor (1966).

<sup>14</sup>Bulovsky – researcher of the Academy of Sciences of the Ukrainian SSR.

<sup>15</sup>The letter is written on the top right of the report by J.P. Den Hartog addressed to the S. Kozhevnikov.

<sup>16</sup>Konstantin V. Frolov (22.07.1932 – 18.11.2007) – expert in the field of mechanical engineering and machine building, academician of the Academy of Sciences of the USSR (1984).

<sup>17</sup>Ivan Ivanovich Artobolevskii (9.10.1905 – 21.09.1977) – Soviet scientist and engineer, academician of the Academy of Sciences of the USSR (1946).

<sup>18</sup>Institute of Mechanical Engineering was established in 1938 to organize research in machines (of Mechanical Engineering). The Institute was part of the Department of Technical Sciences Academy of Sciences USSR. The activities of the Institute has focused on developing of scientific bases and scientific support of

major programs of mechanical engineering. A considerable amount of research has been done in the interest of missile and aerospace engineering, shipbuilding, atomic engineering, agricultural machinery.

<sup>19</sup>Pinehin Serhiy Vasyl'ovych in 1962 he was deputy director of the Institute of Mechanical Engineering, Professor.

<sup>20</sup>Anatoli A. Blagonravov (01.06.1894 – 04.02.1975) – soviet scientist in the field of mechanics, one of the developers of reactive systems of volley fire BM-13 “Katyusha”, academician of the Academy of Sciences of the USSR (1943), lieutenant-general of artillery.

<sup>21</sup>Serensen Serhiy Volodymyrovych (29.08.1905 – 02.05.1977), mechanical engineer, examined the dynamic strength of machine parts and strength in mechanical engineering, member of Academy of Sciences of the Ukrainian SSR (1939).

<sup>22</sup>Sokolov – Scientific Secretary of the Institute of Mechanical Engineering.

<sup>23</sup>Bauman Moscow Higher Technical School.

<sup>24</sup>Lur'ye Anatoliy Isakovych (19.07.1901 – 12.02.1980) – scientist in the field of theoretical and applied mechanics, corresponding member of Academy of Sciences USSR (1960).

<sup>25</sup>Dzhanelidze Georgiy Iustinovich (1916-1964) – scientist in theoretical mechanics and vibration technology, Doctor of Science, Professor, dean of the Physics and Mechanics Department of Leningrad Polytechnic Institute.

<sup>26</sup>Nicolas Poliachov (Polyakov) – dean of engineering at the University of Leningrad.

<sup>27</sup>Leningradsky Metallichesky Zavod – is the largest Russian manufacturer of power machines and turbines forelectric power stations.

<sup>28</sup>Alex Sergeiwich Zilberman (1909-1979) – soviet constructor of steam turbines.

<sup>29</sup>Arkady Zinoviewich Shemtov – head of the Laboratory of vibrations of Leningradsky Metallichesky Zavod.

<sup>30</sup>Olympiev – researcher of the State Research Institute for Turbines and Boilers in Leningrad.

<sup>31</sup>David Rakhmiliyovych Merkin (1912 – 06.04.2009) – soviet scientist and engineer, Doctor of Science, Professor, head of Department of Theoretical Mechanics of the Leningrad Institute Water Transport Engineers.

<sup>32</sup>David Sergeiwich Tavchelidze (25.10.1910 – ?) – soviet scientist in the field of mechanics and engineering, academician of the Georgian SSR (1980), Professor of the Georgian Polytechnic Institute.

<sup>33</sup>Terab Mikeladze – Professor of the Leningrad Polytechnic Institute.

<sup>34</sup>Zavriyev Kyriak Samsonovych (28.01.1891 – 14.12.1978) – scientist in the field of structural mechanics and seismic stability structures, academician of the Academy of Sciences of the Georgian SSR (1941).

<sup>35</sup>Sviatoslav Fedorovich Kozubowski – in 1962 a graduate student of the Institute of Electrical Engineering of Academy of Sciences of the Ukrainian SSR.

<sup>36</sup>Savin Huriy Mykolayovych (01.02.1907 – 28.10.1975) – ukrainian scientist in the sphere of mechanics, academician of the Academy of Sciences of the Ukrainian SSR (1948).

<sup>37</sup>Yurii Alekseevich Mitropolskiy (3.01.1917 – 14.06.2008) – ukrainian mathematician and engineer, academician of the Academy of Sciences of the Ukrainian SSR (1961) and Academy of Sciences USSR (1984).

<sup>38</sup>Pisarenko Heorhiy Stepanovych (12.11.1910 – 09.01.2001) – ukrainian scientist-mechanic, founder of scientific school of mechanical vibrations, strength of materials and structural elements in extreme operating conditions, academician of the Academy of Sciences of Ukraine (1964).

<sup>39</sup>Dr. M.G. Gortchakov – Doctor of Science, he worked in Kyiv University.