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INTRODUCTION TO AUTOBIOGRAPHICAL NOTES OF BURGERS COMPOSED IN 1954

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Johannes (Jan) M. Burgers was born in Arnhem in The Netherlands on January 13, 1895. His potential as an outstanding scholar was recognized early and he started to work as a Professor of “Aerodynamics, hydrodynamics, and their applications” in the Department of Mechanical Engineering, Shipbuilding Engineering, and Electrical Engineering of the Technical University in Delft in 1918, two months before he received his PhD in the Physical and Mathematical Sciences from the University of Leiden as a graduate student of Paul Ehrenfest. Jan Burgers became one of the prominent scholars in fluid mechanics during the first half of the 20th century. William F. Durand of Stanford University considered Jan Burgers as one of the “Big Four” in fluid mechanics at the time, the other three being Theodore von Kármán, Ludwig Prandtl, and Geoffrey I. Taylor. In 1955 Jan Burgers moved to the USA to become a Research Professor at the Institute for Fluid Dynamics and Applied Mathematics of the University of Maryland. When Burgers reached the mandatory retirement age of 70 in 1965, the University of Maryland took the exceptional step of enabling him to remain professionally active as a Research Professor on a part-time basis for many more years. He died on June 7, 1981. A considerable amount of information about Jan Burgers can be found in a volume edited by F.T.M. Nieuwstadt and J.A. Steketee [1]. This volume also contains biographical information.

The Burgers Archives contain two sets of extensive autobiographical notes written by J.M. Burgers in 1962 at the University of Maryland, one dealing with the period of his youth in Arnhem and one other dealing with his experiences as a student at the University in Leiden. We have published these two sets of autobiographical notes in 2007 on the occasion of 15th anniversary of the JM Burgers Centre [2].

Subsequently we have found another set of autobiographical notes, earlier written by Burgers in 1954. To understand the motivation behind these autobiographical notes, we need to return to the time that Burgers was a graduate student of Paul Ehrenfest [3, 4]. Ehrenfest, born in Vienna, had married the Ukrainian and Russian-educated Tatiana Afanasyeva. After working for some time in St Petersburg, where the couple became friends with the physicist Abram Joffe, Ehrenfest had been appointed as professor of theoretical physics in Leiden in 1912. However, Ehrenfest continued to keep close contacts with Russia. After the Bolsjevik revolution, Ehrenfest shared with some intellectuals at the time the hope that through socialism a new culture could be realized with a close harmony of science and society. This inspired some of the students of Ehrenfest, including Jan Burgers [5]. In 1918, the Communist Party of Holland (CPH) was formed and Burgers joined the group of intellectuals involved in this party. Around 1930 Burgers became disenchanted with the CPH because of the undemocratic Soviet influences which had penetrated the CPH and he formally resigned as a member of the CPH in 1933.

The contacts of Jan Burgers with the U.S. started in 1931, when he spent some time at the California Institute of Technology (Caltech), Pasadena, CA, upon the invitation of Durand. After World War II, Burgers was invited to visit the Naval Ordnance Laboratory in Maryland and Caltech in California in 1949. Subsequently, Burgers and his wife returned to the US for the entire

1950-1951 academic year, where Burgers became involved in many professional activities throughout the U.S.

Burgers had found his experiences in the U.S. very inspiring and he had favorably reacted to the possibility of moving to the U.S. , which eventually led to a formal invitation in 1951 for Burgers to become a research professor at the University of Maryland. Hence, on October 25, 1951 Jan Burgers and his second wife, Anna M. Burgers-Verhoeven, applied for a U.S. immigration visa at the American Consulate in Rotterdam. However, it was the McCarthy era with a virulent anti-communist climate in the U.S. Because of his past affiliation with the communist party in the Netherlands, Jan Burgers was informed that no immigration visa would be granted to him and his wife. This was a very serious setback leading to a lot of activity involving various colleagues and administrators trying to resolve the problem. Eventually, Burgers was invited to come for an interview at the American Consulate in Rotterdam in early February 1954 to discuss the visa problem. He was told that any reconsideration of his visa application would require that he prepare a detailed report explaining his political activities and what he had done opposing communism. In response to this interview, Jan Burgers prepared a statement in March 1954 concerning the personal development of his political opinions, which was submitted to the American Consulate.

While the document was prepared by Burgers in support of his U.S. visa application, it is a fascinating historic document elucidating the evolution of his ideas about science and society and his personal struggle to reconcile these two aspects in his personal life. It also provides insight in the cultural atmosphere of the first half of the 20th century. Excerpts from this document can be found in the volume of Nieuwstadt and Steketee [1]. As mentioned earlier, we published some autobiographical notes of Burgers in 2007 on the occasion of the 15th anniversary of the JM Burgers Centre (JMBC). The period 2013-2014, covered in the present annual report of JMBC, coincides with the 10th anniversary of the Burgers Program at the University of Maryland, established in 2003 in close coordination with JMBC. Since the autobiographical notes of 1954 are intimately related to the desire of Jan Burgers to embark on a second career in the U.S., this would seem to be a proper occasion to make these autobiographical notes available in their entirety. The notes below are a transcript of the original ones found in the archives with some minor editorial adjustments. We believe that these notes are of interest to those who admire Jan Burgers as a scholar and as a person and who appreciate his scientific heritage in The Netherlands and in the U.S.

J.M. BURGERS

Statement concerning the development of my political opinions (March 1954)

From my parental home I have received the urge to form an independent judgment and to think freely. I also learned the utmost importance of moral and intellectual honesty, and of faithfulness. Together with that, I was educated in the conviction that one must strive towards enlightenment for everybody and towards providing every man and woman with the possibility of living without poverty and fear. I learned to consider peoples of other nations as being just as valuable and important as those of my own country.

Moreover, from my parental home I received the desire to inquire and to understand. My father had great abilities



expounding popular science; his wide interests, which my mother shared as far as she could, were communicated to my brother and me. In this way we were introduced into the elements of physics, astronomy, geology and biology, and at an early date we were shown the wonders revealed by the microscope. Gradually we took over from our mother the task of assisting father with his popular lectures and demonstrations, and we helped him when he was collecting or arranging material for these lectures. The secondary school, which we visited in our native city Arnhem, widened my interests towards ancient history and geography. Nevertheless, since I was good at mathematics and physics, the latter subjects became preponderant and determined my further career. My brother took to physical chemistry.

In 1914, when I was nineteen, I went to the University of Leiden to study mathematics and physics. I listened in particular to lectures of Lorentz, Kamerlingh Onnes and Ehrenfest. Among these three, it was Ehrenfest (who gave the main course in theoretical physics) who has had the greatest influence on me, through his sincere and complete friendship and through his powerful analytic mind, which deepened in me the desire for inquiry and understanding without limit and without fear. In later years I understood that I possessed something which Ehrenfest missed: a conviction of the meaning of life, a faith in the sense of all things around us, which I owe to my father. This has protected me and has helped me over difficulties that Ehrenfest has not been able to conquer.

My student years coincided with the war of 1914-1918 in Europe, which had cruelly shattered the ideals we had cherished in my parental home. The development of the war brought atrocities and the beginnings of suppressions of freedom, which later on have become more and more severe in several parts of the world. Under these circumstances it is not strange that young people, like me, were deeply struck by the fact that in the beginning of 1917 a regime of oppression was overthrown in Russia. We were even more impressed by the first words of peace that were spoken in November of that same year by the group of men who had then come to power in that country. In comparison with the stagnant ideas of the other political groups, it looked that under the conditions then existing, the program of the men who tried to find some solution out of the terrible plight in which the Russian people found itself, was the best approximation available to the ideals of freedom from want and freedom from oppression, which always stood before me. I use the word "approximation" intentionally: as a scientist I am convinced that our thoughts cannot be otherwise than approximations to a truth which itself is beyond us; one pursues an approximation so long till one is prepared to discard it when it is superseded by a better one.

Under these circumstances I felt induced to take up contact with a group of "left-wing" people in Holland, who had broken away from the social-democratic party already in 1909 and who looked with great hopes to what was now being attempted in Russia. The members of this group were mainly intellectual people and some poets; there were amongst them at that time comparatively few people from what is called the "working class". Several of them wrote essays on political theory. They did not intend to "start a revolution"; their theory was (and I think it goes back to Marx's own ideas) that a revolution may occur in a country, when economic or other difficulties have risen to such a point that the existing government is unable to find a solution; if under such circumstances great masses of people would come into motion, a revolution might be the result, and in view of that it would be useful to contemplate whether some other solution, some other economic and political system could help.

A book that had appeared in 1918 and had made a certain impression on me, was by the late Henriëtte Roland Holst, who is honored (still at the present time) as the greatest female poet in Holland of our era, on "Revolutionary Mass Action." It attempted to demonstrate that in times of crisis the masses could be trusted to have the proper feeling for what would be the right thing to do, and it gave a historical account of many situations where this had happened. I hoped that this doctrine would be true, fearing that ordinary education works too slowly and may not reach its purpose when it is not stimulated from time to time by some great shock. Later I have realized that when large masses of people come into motion, too many stupid and crippled souls penetrate into the leading groups, the consequences of which have appeared, very cruelly, in Russia and in Germany, as well as in many other regions.

To come back to the group of "left-wing" people I have mentioned, all of them had started from democratic principles and though they often quarreled frightfully amongst themselves, they still had respect for each other's personality. The relations existing in their organization were quite different from what has developed afterwards; there was no party organization in the later sense of the word. In 1918 they had started to call themselves "Communist Party of Holland" (CPH), but at that time and even for many subsequent years they did in no way resemble the organization that is presently known as communist party. My belief at the time, that this group was a bearer of ideals directed at promoting well-being and happiness for the greatest number of people, more adequate than any other then existing political group, was strengthened by the state of conservatism and reaction which prevailed in many countries of Europe in the years immediately following 1918.

The complete failure of the social-democrats of that time to give a clear analysis of the crisis that was tearing Europe apart, had caused a bitter disappointment.

The League of Nations, which had been created at the end of the war, was loaded with so many internal quarrels and such weaknesses, that it did not look like a promising instrument. It was only several years later that it began to embody certain important ideals. An organization for international scientific cooperation, created in 1918-1919, suffered under rules which locked out scientists from Germany and Austria. It was only in 1928 and finally in 1931 that these rules were changed and that a better climate for cooperation appeared. Therefore, my own involvement in the field of international scientific cooperation started in an independent way, to which I shall come back later.

I have mentioned this to explain how uninspiring the outlook was in the years immediately following 1918. What was going on in Russia at that time seemed to be the only glimmer of light. It is difficult at present to form a proper picture of that period; so much of our outlook has changed since then and it will be more difficult for an American, in particular for the middle and younger generations, for whom problems and conditions were so completely different.

I state again, and this is of importance when one attempts to form a judgment about those times, that in the so-called CPH of these years (from 1918 into the nineteen-thirties), there was no oath of allegiance, no promise which bound members, no party documents giving any rights or putting one under certain obligations, no registration numbers, no cells, no secrecy. Holland was a slow country in several respects and those who sympathized with the communist ideas were imbued with democratic convictions and did not like to be bound hands and feet. The persons whom I met personally were older people, schooled in the days before 1914 and keen on open discussion. The group in Delft was not important and was very small, a few people from the working class, a few from offices, a schoolteacher, all of whom were democratic by nature. My interest was theoretical, directed at understanding and observing, in the belief that insight in communist opinion would provide understanding what happened in history.

I have never taken part in any action. Never did I take side in open discussions, whether at meetings or in writing; nor did I write any essays. I kept myself in the background, as an observer, and I have always kept complete personal independence. I have never mixed up anything of my political interests with my university work. The rules concerning the adherence to certain political parties valid for civil servants, did not apply to university professors. It was once pointed out to me that I should not make any political propaganda among students: I never attempted nor intended to do so. I did not start any discussion group, nor did I attempt to influence any student privately. I am not a propagandist for a subject which cannot be stated in mathematical formulas. On the whole I had little contact with students beyond my lectures during the first years of my professorship; and I was not inclined to expound to other people political views of which I felt the limitations and uncertainties myself.

In all those years, just as later, I have done all my work, in Holland and elsewhere, whether scientific, educational or administrative, honestly, loyally and carefully, as bound by my conscience and by my oath to my own government, and to the best of my abilities, without ever suffering myself to be led astray by any subversive doctrine or thought. I have never broken any trust that was placed in me, never given out any information to people for whom it was not intended. I have never accepted any rule of conduct from communists. I was trusted, therefore, by all my university colleagues and I took my part in the usual administrative work. Although many of my colleagues knew of my political views, my opinions were appreciated in all university matters. I have been secretary of the Department of Mechanical Engineering and Shipbuilding from 1921 to 1924, and chairman from 1929 to 1931.

I have never suffered myself to be blinded by a tenacious keeping to beliefs. I was interested in Marx's views on history and on economic development, but I found that, whereas some of his original ideas are highly illuminating, there was much in the development of so-called historic materialism, which I could not accept at face value. I began to observe errors of judgment in the people who professed communist ideas, and my sympathy with and my faith in communists decreased in the measure by which Russian influence began to show itself in the party in Holland and became a threat to independent thinking (the circumstance that more hopeful signs were making their appearance in other quarters also contributed to my change of attitude). In the communist party in Holland people whom I had respected for their judgment, were pushed out. I saw that tendencies developed towards doing away with an independent attitude. I remember having had a long discussion with somebody, who professed that loyalty to the party should go above all, above one's independent judgment, above honesty to other people, but I could not convince him of my entirely different point of view. I also remember that once I was asked what I would do if a revolution would break out. My reply was: "first wait and see what is happening, in order to understand something about it." This was considered quite insufficient: I should have said that I would come immediately to the party and follow its orders, which I refused. I began to distrust the soundness of the judgment of people who were directing communist policy, and I was extremely shocked by the fact that the communist party in Germany in the beginning

of 1933 directed its members to vote for Hitler and against the democratic groups, thinking that once Hitler would come to power, the communists would be able to take over within a few months. For a party that professed to have an almost perfect organization for obtaining information about workers' movements in all countries, such an error of judgment proved that it was blind on essential points. By doing so it has co-operated with the occurrence of the worst calamity that has befallen Europe in this century. In 1932, in a leading German communist periodical on "Marxism" I found a series of articles on the meaning of Marx's work, which utterly disgusted me by the way in which every author repeated the same slogans, without ever bringing a single original thought. It demonstrated the low level of thinking which official teachers of Marxism had adopted.

The result of all this, in addition to the increasing pressure of my scientific work, was that I ceased going to meetings already before 1930; it may well have been even some years earlier. Some personal bonds of friendship with a few of the older people still held me for a time, until I formally resigned in September 1933. A translation of my letter of resignation, dated 22 September 1933, is attached as an Appendix.

I did not undertake any open action against the communist party after my resignation; there was no reason for it and I have always been an enemy of advertising myself. I have never allowed party people to use my name for any purpose during my membership of the CPH; I did not want to have my name be associated with any opposition action. Neither would this have been in the interest of my University; such things would have been thoroughly disliked. I have not been a conspirator and nobody has thought that I ever would be one. On the other hand, I have not been treated badly by the party members; many of them had already observed the change in my attitude for a long time; they respected me and let me go without difficulties. Many of them still were democratically minded and could accept a personal conviction. Also, there were no improper activities in the party which might have required exposure. Yearly conventions were still open to the public, and the aim was to spread a system of political ideas, not to engage in secret conspiracy. It was not a communist party in the sense as is currently understood. There were many non-communist persons at that time who believed, as I did, that as one of the possible forms of political opinion the CPH could be useful. As for myself, I had already seen that for any attempt to help solve problems of human society, I would have to go quite a different way, to which I shall return below.

The party had ceased for me to provide a satisfactory background for ideals and for an understanding of what was moving the world. It had become barren for me and it is not in my nature to fight what is dead for me. Hence, I could leave it without scars in my conscience. I had no internal difficulties or doubts about doing this, which sometimes can hinder people greatly. Nobody had ever attempted to ask from me any dishonest thing; that did not happen among the people whom I have known. I was certain about myself and did not need to defend finding myself back again. I have not been so naïve as several people who contributed to the book "The God that failed", most of whom became communists when I had already turned away and had directed my thoughts in a different direction. I have not been upset in any way as some of them have been.

American citizens, judging from present day affairs, cannot form a picture of what existed in Holland in the years before 1933. The people who had established the communist party in Holland in that period, did so because they believed to have a vision of an ideal for the entire world; they also believed that Russia was on its way to realize much of it; but they never considered themselves to be just fighters on behalf of the U.S.S.R. and they fought against the penetration of Russian methods into the party organization. Later on, other views may have prevailed, but it was not so in my time, and it is not logically correct to put the group, which I have known, into the same category as the people who believe in the present Russian brand of communism.

A point which I want to stress is that I have taken great care that my children would not be inoculated with any communist doctrine which would be difficult for them to get rid of later. At home we always have discussed freely and with an open mind, giving attention to the various aspects of every problem. In 1933 my children (they are from my first marriage) were still young. When they grew up and became interested in what was happening around them, I have done my best to give them a clear allround view and I have expressed to them my distrust of communist tactics or opinion, in those cases where any piece of news opened an opportunity for discussion.

In later years my older daughter has turned to a more religious attitude of mind than I have myself. She is now a hospital nurse. My son has studied law. He was in Netherlands military service from 1947-1950; two years of this were spent in Indonesia, where he was not in the fighting forces, but worked at the court-martial in Batavia. In 1950 he was entrusted with the direction of the judge-advocate's office. At present he has a position at the Ministry of Foreign Affairs in The Hague. My younger daughter is studying medicine in Amsterdam, and she has the same openness of mind and the same fearlessness we all have, which was present in my father's home and in that of my first wife, and which is fully shared by my present wife.

In the meantime I had taken up work directed to furthering international cooperation in science. Later I have been occupied several times with the organization of research into problems connected with the relations between science and society. This work was aimed at promoting an attitude of mind quite different from that advocated by the communist party. I therefore think it appropriate to give some details about that work, the more so as it belongs to the circumstances which have shaped my mind. By the way, it were my international scientific relations which led to some contacts with Russia (these had not come through party connections) and to a close contact with the U.S.A.

I had been internationally minded from the start; to be otherwise is not possible in science. As a student in Leiden, I had worked with Professor Ehrenfest and in 1916 I succeeded in proving a theorem referring to an earlier form of quantum mechanics, which was of importance for Ehrenfest's work. Ehrenfest then brought me into correspondence with physicists outside Holland; among these was Dr. P.S. Epstein, who at the time worked in München (since 1922 he is professor of theoretical physics at the California Institute of Technology). Ehrenfest also introduced me to Einstein, when the latter visited Leiden in 1916.

In 1918 I was appointed as full professor of aero- and hydrodynamics at the Technical University of Delft, a position which I still hold at present. The appointment came a few months before I had obtained my doctor's degree at the University of Leiden; I was then 23. The professorship position that was entrusted to me was a completely new one in Holland; I do not even know whether at that time there were similar ones elsewhere. I had to create the subject and its method of teaching and I also had to create a (although modest) laboratory. In passing I mention that aeronautical research as required by industry and by the military was entrusted to a newly created Government Research Institute (founded in April 1918) with which I always have had strong personal and scientific relations. In 1937 I was appointed as a member of its scientific advisory committee.

In 1921 I became acquainted with Dr. Th. von Kármán, then professor of mechanics and aerodynamics in Aachen; this was the beginning of a lifelong friendship, by which I feel greatly honored and which did not change when Dr. von Kármán in 1930 went to the California Institute of Technology. It still lasts until the present time. Dr. von Kármán was then working on subjects of boundary layer friction and turbulence; in 1923 and 1924, by making use of a special type of apparatus, my assistant and I succeeded to do some fundamental research in my laboratory at Delft, which confirmed Dr. von Kármán's theories.

Dr. von Kármán also invited me to take part in the first international conference on Hydro- and Aerodynamics in Innsbruck in 1922. The next year Dr. von Kármán visited me and proposed that I should try to organize an International Congress on Applied Mechanics at our University in Delft. I consulted my colleague Professor C.B. Biezeno. Both of us felt greatly attracted towards the idea; we started working on this project and the Congress, which took place 22-26 April 1924, was a great success; scientists came from 19 countries, including U.S.A. (Dr. J.C. Hunsaker), U.S.S.R., Spain, Turkey and Egypt. Professor Biezeno was chairman and I was secretary; after the Congress we were editors of the Proceedings. We had invited a number of scientists from various countries to form a "sponsoring committee"; this committee became a permanent body which decided to arrange regularly for such international congresses. Since then they have been held in 1926 (Zürich), 1930 (Stockholm), 1934 (Cambridge, England), 1938 (Cambridge, MA, U.S.A), 1946 (Paris), 1948 (London), 1952 (Istanbul); the next congress will be held in Brussels in 1956. I have always remained a member of the International Congress Committee and have taken part in its discussions and decisions.

We did this independently of the then existing "International Research Council", the organization which I have alluded to earlier and which at that time suffered under rules barring the Germans and Austrians. We found sufficient support among our scientific colleagues to continue in our way without difficulties.

In 1928 the International Research Council was replaced by a new body, the "International Council of Scientific Unions", which could accept scientists from all countries. My colleagues in applied mechanics, in Holland, Great Britain and in the U.S.A, thought it wiser to remain independent with our international congresses. However, after World War II, at the VIth International Congress of Applied Mechanics in Paris, I proposed that we should change our attitude and form an "International Union of Theoretical and Applied Mechanics", which could ask admission to the International Council. This proposal was accepted and I was appointed secretary of the new International Union. The International Council accepted our Union as a member in 1947. I held the position of secretary until 1952. When I stepped down to get more free time for purely scientific work, I could then feel certain that the Union was well under way and leave the secretarial work to my successor, Professor F. H. van den Dungen in Brussels.

During my time as secretary I came into contact with UNESCO, which helped the Unions with financial grants. Together with Professor J. H. Oort in Leiden, representing the International Astronomical Union, we have initiated two "inter-Union" symposia on the gas dynamics of the interstellar clouds, one in Paris in 1949, and the other one at Cambridge, England in 1953. For each of these symposia UNESCO gave a grant of \$6000 for the two Unions together, to enable paying travel expenses for a selected group of invited scientists from European countries and from the U.S.A (naturally, most of the money had to go to the latter country because of the larger distance). Through the recommendation of Dr. von Kármán, the Proceedings of the first meeting (the editorial work was done by me in cooperation with Professor van de Hulst in Leiden) have been printed for us free of charge by the Central Air Documents Office of the U.S Army-Navy-Air Force in Dayton, OH, in view of the importance of the results for the U.S.A. Another "inter-Union" symposium, for which I also had taken the initiative, was held in 1950 at Hershey, PA through cooperation of the International Union of Geodesy and Geophysics and the International Union of Theoretical and Applied Mechanics, the subject being "Plastic Flow and Deformation within the Earth", while Dr. L. H. Adams of the Geophysical Laboratory, Carnegie Institute of Washington, acted as chairman. Again UNESCO gave a grant of \$6000 for the two Unions together.

I pass over some other international bodies of which I have been secretary and where my main task was to coordinate the work.

In 1929, when Dr. von Kármán was still in Aachen, Dr. W. F. Durand from Stanford University in California came over to invite European scientists to cooperate in the preparation of a standard work on aerodynamics, which he was editing under a grant from the Guggenheim Fund for the Promotion of Aeronautics.. Dr. Durand considered Dr. von Kármán, Professor Prandtl in Göttingen, Professor Taylor in Cambridge, England, and me to represent the "big four" in aerodynamics at that time; and he asked von Kármán and me to prepare one of the volumes. For this purpose Dr. Durand invited me to come to Stanford University in the beginning of 1931. I was in California for four months (including a stay of three weeks at the California Institute of Technology). This was my first visit to the U.S.A.

I now come to a discussion of my contacts with Russia. As mentioned earlier, they were of a scientific nature. Apart from that I have been no more than a visitor and a friend of several scientists.

At the first International Congress of Applied Mechanics in Delft in 1924, three Russian scientists attended, among them Professor A. F. Joffe (who was then one of the great masters in physics and who had done fundamental work on the properties of crystals, on which subject he gave a series of lectures some years later, in 1927, at the University of California in Berkeley, CA.) and Professor Friedmann, who brought a pioneering paper on turbulence. Friedmann died in Leningrad in 1925, and when in the fall of that year Joffe visited Holland again, he asked me whether I would be willing to become Friedmann's successor. I felt inclined to consider the proposal and in 1926 I visited Leningrad and Moscow for about six weeks, to see what was possible. It proved to be impossible for me; the conditions were too uncertain and moreover, I had to consider the state of health of my wife, for whom the difficulties of living in Russia would have been too great.

In 1929 and in 1930 I was invited to give a series of lectures on hydrodynamics in Moscow and in Leningrad. On both occasions I met many persons and I saw again several of those whom I had seen in 1926. Without exception they were persons of my class: scientists, professors, students; they were nice and friendly and hospitable to the utmost as the not very rich conditions of their country permitted. I spoke some Russian, sufficient for my lectures and for personal conversation; I could find my way alone and did not need a guide, and I visited many of my friends in their homes.

There still followed an invitation from the Central Aero-Hydrodynamic Institute in Moscow in 1936. I visited Russia in the summer, at a time when there were many American and other tourists, and I made a short trip to the Northern Caucasus. I did not stay, however, to give lectures as originally intended, since I received an invitation for a scientific conference at Edinburgh, Scotland, in which I had to take part. This obliged me to go back before the school season started.

Moreover, some things had given me an unpleasant feeling about the conditions in Russia. We had heard in Holland about convict labor, and in Moscow I was told in a local train that the new canals in the country around that city had been made by convicts. Of course, one cannot say anything about convict labor when one does not know the conditions, and about these we did not speak. However, there was more. The great physiologist Pavlov had died and the semi-popular Russian journal "Science and Life" published an issue in which, in the name of the Russian Academy of Sciences, various scientists expressed their admiration for Pavlov's work. As far as I could read the articles, they were disappointing: almost everyone stated that Pavlov had been such a good Marxist, but there was no real explanation of the meaning of Pavlov's work, no precise description of the experiments and their results, which would enable the reader to form a judgment for himself.

When I returned from the trip to the Caucasus, the first one of the well-known trials had just started. Together with one of my fellow passengers I read the newspaper report. I told him that I could not understand how a communist could have debased himself so far as to seek allegiance with Nazi-people and with capitalists in Germany. My fellow passenger, who made a very honest impression, told me that he could not understand it either. In Moscow I observed that every journal, including weekly periodicals, published exactly the same report; there was no individual reporting as we know in our countries. Then I read a story in the *Izvestia*, entitled "Treason amidst our own ranks", in which it was told that in a factory in Leningrad a young man worked whose father was among the accused (no sentence had been pronounced as yet), and it was decried as intolerable that the young man should be allowed to stay there. A meeting of the workers had been called to consider this and to require that he be fired. No mention was made of any bad deed or bad move the young man had made; as the worst item it was mentioned that he had been active in a youth organization. In the *Izvestia* of the next day there appeared a report on a workers' meeting at another factory: acting upon what had been reported about the previous meeting, the workers of the second factory expressed their indignation against the same young man and asked that he be chased from the ranks of faithful people. It was all too clear that this case of "guilt by association" was staged.

I then heard some things about trials in Russian prisons (not such things as have been told later or have been guessed from what the official reports of trials would make believe us), but still sufficiently impressive for me. It was about a man who had been before the court on a certain night and was told that he has forfeited the right to live and he knows that within a few minutes he will be sent out into the corridor where he will be shot immediately. In this state of nervous tension, the man may be offered a cigarette by the acting judge and this may lead to renewed questioning. The examination then perhaps may end with his being sent out through another door, back to his cell. This was in 1936; I do not know what has happened since then, but I am afraid that things have become worse. I could, of course, not speak in public about these matters, which would have endangered those from whom I had heard them. But I have mentioned them often in private conversation.

I also had observed the stubbornness of an official, whom I had to ask something about my passport, but on the other hand I still must record the helpful way in which another official, in a similar position but in another city, gave me an extension of my visa when it was nearly ended and made things easy for me.

Towards the end of 1936 it was told in Europe that it was better not to write to Russian colleagues any more, for fear that they might suffer from it in their own country. The consequence was that I lost all contact with the people whom I had known.

Shortly thereafter, it became known in Holland that several Dutch people, who in the years before had emigrated to the U.S.S.R. and who had given all their energy to their new country, had disappeared. It was impossible to obtain any information about them.

I repeat that the people with whom I had made acquaintance on my travels in the U.S.S.R. were scientists, university people. Of them I have the best recollections: they were friendly and sympathetic. I would say "just like Americans", but scientists are apt to form a brotherhood all over the world. I could trust them and I was trusted by them; of that I have proof. I have never had any contact with party members or with their organizations in the U.S.S.R. I was afraid that party people would make use of my presence for propaganda purposes, something I most heartily disliked and still dislike; I did not want being driven into a false position. I also knew that those scientists, like Joffe and some others, who had hoped that I would come to their country to work with them, in no way wanted me to be involved in party politics. They were men who loved science and loved mankind; they accepted their government for what it gave to them in the form of possibilities for research, they had hope in its future, but they were no party politicians. I know that one of my colleagues took care to keep Russian newspaper men away from me; he also told me that already at that time there were factions fighting each other to death. I have never been employed by the Russian government or by a Russian firm, neither directly, nor as a consultant.

I have not been so naïve as the French writer André Gide, who was a member of a delegation of artists much honored in Moscow (I believe it was also in the summer of 1936). Then Gide made a trip to the Caucasus, he wanted to send a telegram to Stalin to express his gratitude and he was upset when he was told that he should use the prescribed formulas for praising Stalin. Any man who used his brains should know that when one is honored as a special guest, one must pay for it in the form of some official statement of admiration. I have carefully kept away from these things and, therefore, I did not need to write a book "Retour de l'U.R.S.S." as Gide did, in which he gave some criticism along with his praise of the country (for which criticism he then was promptly decried by all communist papers in Western Europe).

As I mentioned, I spoke Russian sufficiently to make myself understood, and I could move freely through the streets, buy what I desired and travel in trains without the need of a guide. I have stayed with people at home and partook in their life.

My trip to the Caucasus was arranged by a friend who belonged to the Scientists' Club in Moscow and who gave me an introduction to a tourists' camp; I travelled alone, talked with my fellow passengers, shared their troubles when a truck in which we were transported broke down at night, or when on the road back heavy rains threatened to flood the road and to throw our bus into the river.

Then the second war came: the Russian-German pact and the partition of Poland, the forceful removal of the entire populations from the Baltic countries to Siberia, the attack upon Finland, etc. This showed us how much things had changed with the Russian government and with the party on which it bases itself. I have read later about German communists, who years before had come to the Soviet republic to escape from the Nazis, but who in 1940 were turned over by the Russian government to the Nazi police. What had become of the ideals for a new era of human freedom, which had been upheld before us some twenty years ago?

When in the second part of the last war the Russian armies were able to expel the Germans from their country, we all were very glad in Holland: it meant the turn of a tide which had enveloped us. The successes of the Russian armies were followed with much enthusiasm and we hoped at the same time for a better state of affairs in Russia herself, which would bring greater freedom to the Russian people and make possible a genuine contact between them and the Western nations. It is not necessary to stress that our hopes have failed in this respect.

I will now mention some points concerning the development of my world picture to make clear how far I have gone away from crude Marxist ideas.

I have already mentioned that about 1930 there were several developments which gave much more hope than in 1919 and 1920. The League of Nations proved to stand for some good things and I was impressed by the report the League had prepared on the Japanese aggression in China in 1932; I read this report with much interest and I saw that it was written without concealing any of the facts. Another feature was the address read by General J. C. Smuts from South Africa as president of the Centenary Meeting of the British Association in London, in 1931, on "The scientific world picture of today" in which he spoke the following words (which for many people have become a guiding thought):

"One of the greatest tasks before the human race will be to link up science with ethical values, and thus to remove grave dangers threatening our future. A serious lag has already developed between our rapid scientific advance and our stationary ethical development, a lag which has already found expression in the greatest tragedy of history. Science must itself help to close this dangerous gap in our advance, which threatens the disruption of our civilization and the decay of our species. Its final and perhaps most difficult task may be found just here. Science may be destined to become the most effective drive towards ethical values, and in that way to render it's most priceless human service. In saying this, I am going beyond the scope of science as presently understood, but the conception of science itself is bound to be affected by its eventual integration with the other great values."

A similar spirit was expressed in many books by the British author H. G. Wells, of whom I had read the "Outline of History" and the "Work, Wealth and Happiness of Mankind" and several others. Wells always gave evidence of flashes of deep insight; he had a peculiar form of expressing in a single sentence, by an apt choice of words, ideas which help one to arrive at fresh views on matters that for long times had been loaded with tradition. One of his observations was that it is now becoming inadequate to picture the struggles of mankind in terms of a contest between "haves" and "have-nots" as a "class war", as the Marxists did: far more, it is now becoming a struggle between people who have insight and look into the future, and people who are restricted in their outlook, being afraid of losing what made life appear secure for them.

I also became more aware of the meaning of what usually are called spiritual matters. I left behind me the simple concept of materialism, in the sense that all what happens in the universe and in man's soul might be explained uniquely and completely on the principles and results which we deduce from physics and mechanics. I recognized the limitations of scientific reasoning on the basis of causal and statistical laws (which, of course, does in no way decrease my love for science and my admiration for the insight it provides).

All this pointed to the need of a far more fundamental understanding than the political theories of the communist creed provided. It was not a domain which could lead to easy discussion, the more so as my way of expressing these matters on the whole is rather abstract. I cannot popularize my thoughts on these problems, since I am constantly seeking for the most adequate words. But on many occasions I came to express parts of my views in private letters and in discussions with some of my physicist friends.

If I try to formulate what I consider as the purpose of human life, I cannot say otherwise than that it is to strive continually after truth; to be continually aware of the task God has put upon us in giving us powers for understanding in forms which others can share with us.

I have used the word "God" not to express a belief in a personal Father, on whose will the world depends, but to account for the consciousness of an urge in us, which I believe to be connected with something that is active in the whole universe. I am also convinced that every expression we give to a truth that we have experienced, be it in human relations, in science, in artistic expression, or in religion, needs continuous rethinking, reformulation and re-interpretation. No final expression can be given once and for all.

My political views derive from this conviction. The best society is one which gives the greatest possibilities and inducements to search for truth and to its expression in manifold ways. Freedom is necessary for this: freedom of thinking and freedom of investigation, and in no way less freedom of expression. The only limits to this freedom are to be found in the help one must give to others; a form of expression that would do serious harm to others, does not serve truth but is a corruption of it.

In our present time not states, nor parties, but individuals and small, freely cooperating groups can make the greatest advances in this respect. And the greatest stimulus for their creative activities is derived from free interactions with others, free exchange of opinions in writing and in speech, by means of letters or publications, and by personal contact (for which free traveling is necessary), in order to stimulate a free exchange of opinions and free mutual criticism between the most diverse elements of our human society. What we call "democratic society" offers the best possibilities for this aim. I know that we have not found a definite form of democratic society, there must always be development, but the best approximation to our democratic ideals must embody the thought expressed by Wells in one of the chapters of "The Work, Wealth and Happiness of Mankind": "Our world is now launched upon a perpetual investigation and innovation, and its ideals of education is no longer the establishment of static ideology, but the creation of a receptive and co-operative alertness".

My scientific work did not permit me to go into philosophical studies as far as would have been needed for writing essays about these issues, although I have sometimes gathered material for this purpose. Some thought have been expressed in minor publications, namely, in a paper on "Entropy and Relation to Function of Life" (1943), in an essay on "Aspects of Modern Western Science" (1944), and in an invited address read before the joint meeting of the two divisions of the Royal Netherlands Academy of Sciences in April 1953 (all these papers have been published, in Dutch, in periodicals of the Academy).

There was one aspect of these problems which came more close to scientific work proper: the relations between science and society. These had begun to attract attention in wide circles of scientists since 1920, and, in particular between the years 1930 and 1940, when the leading British scientific journal "Nature" devoted much space to this subject. I found interest for these matters among several members of the Royal Netherlands Academy of Sciences. In particular, this applied to Professor H. R. Kruyt, who was vice-president of the section of sciences from 1931 to 1947. We considered whether it might be possible to start some work on an international scale, through the International Council of Scientific Unions (Professor Kruyt and I have been regular delegates to the meetings of the International Council for the Academy of Sciences since 1934). At the same time we felt the need for research to be carried out in the Netherlands. In 1938 Kruyt mentioned to me that Professor R. de Joselin de Jong, emeritus professor of medicine, then living in Driebergen, was very much interested and was prepared to undertake research on this subject. A small group of scientists joined us, and we proposed an organization to promote research into the relations between science and society. We had many meetings in Driebergen and drafted a set of statutes, on the basis of which a "Stichting" (Foundation) was created by a deed before Mr. Arie de Mos, notary public in The Hague on 7 February 1940. However, the war of 1939-1945 had already broken out. It came to the Netherlands in May 1940 before any work was undertaken. It was hopeless to continue anything of this kind under the German occupation.

During the Nazi occupation the Technical University in Delft suffered many difficulties. The professors of Jewish birth were dismissed in November 1940; the students went on strike (the same happened in Leiden) and both the universities in Delft and Leiden were closed for teaching to the students. The universities in Amsterdam, Utrecht and Groningen closed at the same time on their own account. The University in Leiden never re-opened during the Nazi occupation, but the Technical University Delft could resume its teaching in May or June 1941. Much was done by the staff to make up for the loss of time the students had suffered (during the period of suspension of teaching I had taken part, for instance, in a private seminar on aeronautics). Very serious difficulties arose in February 1943: on the 6th of February the German police suddenly came to several buildings and arrested the students because of an alleged cooperation with an attack on some pro-German Dutch official in The Hague. Teaching again had to be suspended. A number of students were transported to Germany for forced labor. After some months it was announced that teaching could continue for those students who would sign a declaration of loyalty with the prospect of having to work in Germany after having completed their courses.

The alternative was to be taken to Germany immediately (unless one could go in hiding, which was impossible for many of them). The University Senate, after long discussion, advised the students to sign (we were prepared to graduate not a single student and to keep a secret record of their progress for graduation after the occupation would have ceased). The Netherlands government in exile in London advised the students by radio to go into hiding. With a greatly reduced number of students the University continued operating until the beginning of 1944, when further teaching became completely impossible through a combination of circumstances. Moreover, in September 1944 the big railway strike came as ordered by the exiled government; all transportation stopped and soon after that gas and electricity ran out.

I have taken full part in all discussions with my colleagues, privately, in the Department of Mechanical Engineering, and in the Senate; moreover, I often contacted groups in other cities. Together with my colleagues, I have done my best to help students where I could.

During the war, thoughts about social problems kept many of us busy. When during the fall and winter of 1944-1945 the possibility for doing scientific work was practically reduced to nil, talks with some academic friends at Amsterdam, Leiden and The Hague again raised hope for creating some center of research for such problems. Since communications between the various cities were becoming difficult, it was not possible to get into close contact with Professor de Josselin de Jong, who also was not in very good health. However, I found others who were very much interested and after many discussions on what we considered as most important to be done, we drafted statutes for a new society with a larger scope than the previous foundation. Among the persons cooperating were Dr. F. Bakker Schut, director of the Government Bureau for the National Plan; Professor W. Schermerhorn, who became the first prime minister of the Netherlands after the liberation; Ir. F. Q. den Hollander, who afterwards became director of the Netherlands Railways; Professor N. Posthumus, who became director of the Government Bureau for War documentation; Mr. J. In 't Veld, who became minister for housing ("volkshuisvesting"), Ir. L. Mansholt, who became minister of agriculture, Ir. H. Vos, who became minister for commerce and industry; Dr. C. H. van der Leeuw, director of "Van Nelle", Rotterdam. On July 19, 1945, by a deed before Mr. Jacob Tiedama, notary public in The Hague, a new foundation was created, called "Research Center for Social Problems".

Before the liberation and also during the first months of freedom, we had worked hard to prepare a set of memoranda on various social problems which we expected to come to the foreground in the reconstruction of our national life (general reconstruction questions; planning for the entire country; medical care; housing; public works; protection of nature and care of the landscape; education; cultural meaning of daily work; principles of economic reconstruction; etc.). Meetings were arranged for discussing these and other subjects.

Our financial means, however, were very limited. We had hoped to obtain semi-official status for the Research Center by support from the government. I even seriously considered whether I should devote myself completely to work in this direction which would imply leaving my scientific work, but Professor Schermerhorn had so many other things to attend to, that we were not a priority. We might have obtained recognition, if we could have worked somewhat in the way of the British Society "Political and Economic Planning", which from its proper financial means could undertake social research leading to publications. Our means, however, could not be compared with those of this British organization and what proved worse: most of the people with whom I had planned the work, suddenly proved to be so heavily charged with obligations, that they no longer had time for discussions, still less for undertaking any definite research work. Hence, all responsibility fell on my own shoulders.

Then in August 1945 I was invited to travel to England with a group of assistants of our Technical University, in order to study scientific literature and scientific progress made during the war years, from which the Netherlands had been completely cut off during the occupation. It was my task to provide for the necessary introductions (I had many relations with scientists and with scientific institutions in England) and to guide the assistants in their work. I also received full freedom to study what had been the research on social programs. The trust put in me was very gratifying and I was glad to accept the offer. It took some time before all the necessary preparations were completed; I went alone during the month of November 1945, and then from January 1946 until the end of March a group of 12 assistants came over with me: all very capable young persons, who had been carefully selected.

Our mission was a great success. We were introduced to the National Physical Laboratory in Teddington and to a great number of university laboratories; we had contact with the Department of Scientific and Industrial Research, and with the Patent Office; we went to Cambridge, Manchester and other universities; everywhere colleagues and officials helped us and a large number of references, abstracts and data was brought back to Holland. The Netherlands Government provided an extra grant for the purchase of scientific periodicals, in particular back issues which were missing in Holland; and the British "Help Holland Council" gave us a grant of £b 2000 for the purchase of scientific equipment. Much goodwill was obtained.

Although Holland had been cut off from contact with other countries, it turned out that our work during the occupation had not been unfruitful. In my own area of aerodynamics I found that some of the questions with which I had occupied myself, were of interest to foreign scientists. I was asked to give some scientific lectures. Gradually this drew me back to my original domain of work, and although I gathered interesting information and research on social problems and on various questions of education, science began to regain the heavier weight.

Upon coming back to Delft, it appeared that the Netherlands Navy, engaged in dismantling some submarines and other ships, was willing to offer part of the equipment to several laboratories of our University, and my laboratory in particular could get high-pressure equipment. Moreover, I was told that I could get additional laboratory space, while at the same time the staff of the laboratory would be enlarged. This opened perspectives which required due consideration, and since the new developments of high-speed flow interested me very much and offered a promising topic for theoretical as well as for experimental work, I felt all the attractions of a scientific work returning to me. Since at that time all my collaborators in the Research Center project had departed on their various ways, I took the unavoidable decision: I returned fully to my University work.

(Although not directly connected with the history of the "Research Center", it may be of interest to mention that during the last winter of the occupation several more projects for the creation of new organizations had been made. One of these was the "Nationaal Instituut" for the purpose of making men and women more conscious of our cultural heritage. This "Nationaal Instituut" obtained large government grants and a sumptuous building in Amsterdam to organize its work. Our "Research Center" had personal ties with this institute and there was a kind of agreement concerning cooperation; however, the "Nationaal Instituut", was not directed towards research. The "Nationaal Instituut" was dissolved a few years after the liberation).

I am convinced that the only effective way to protect human society against the spread of disruptive trends of thought, as Nazism, the present form of communism, race conflicts and what further may develop, must be

(a) helping those peoples and those social groups which suffer deprivation;

(b) extensive research into man's reactions to changes of his environment, to the increase of knowledge and to the tremendous increase of technical power, including attention to influencing thought and emotional life.

If we do not embark on such research on a much wider scale than is currently pursued, with determination to give full attention to its results, there will always reappear maladjustments with the consequence of misunderstanding, fear and outbreak of destructive instincts.

I have done my best to organize and to stimulate such research, in discussions, in letters, in articles, and in the way I have described in the preceding pages. That is what I did in order to cope with the destructive trends which appeared in communism and elsewhere. Had I found active collaborators, not tied down by other work, I might have achieved something, either in my own country or in some international form. I went as far as I could with the means at my disposal and gave a great deal of my time to it. In this way I have tried to do something much more useful than would have been the case if I had initiated some action against the communist party in Holland after I had left it. I left it without scars, as I mentioned before, but not with indifference. As far as I could stretch my time, I have tried to prepare myself for a better understanding and for finding means to help others towards understanding. At last, however, I had to come to the conclusion that it was better to restrict the application of my abilities to science.

Since then I have given all my time to my task at the Technical University and to the scientific work connected with it. As mentioned before I was secretary of the International Union of Theoretical and Applied Mechanics from 1946 until 1952. I arranged various symposia and took care of many publications while publishing at the same time my own theoretical research. I was also secretary of an International Committee for Rheology (problems of viscous flow and of plasticity) and took a leading part in the organization of the first International Congress of Rheology in Scheveningen, Holland, in 1948.

I was elected vice-president of the section of sciences of the Royal Netherlands Academy of Sciences in 1947, a post from which I resigned in 1950 in connection with my upcoming stay in the United States from August 1950 to August 1951. I received honorary doctor's degrees in recognition of my work in 1948 from the "Université Libre de Bruxelles" and in 1950 from the Université de Poitiers, France.

Finally, I shall make some remarks about my connections with the United States. I have already mentioned my first visit to California in 1931 upon the invitation of Dr. W. F. Durand from Stanford University.

In 1938 I wanted to attend the Vth International Congress of Applied Mechanics in Cambridge, MA, and Professor Biezeno and I had planned to make a trip to the West Coast after the Congress. On my arrival in Baltimore, however, I was called back by telegram in connection with a serious illness of my wife, which obliged me to return home immediately. She died in August 1939.

After the war new contacts with American scientists were made at the Congresses for Applied Mechanics in Paris (1946) and London (1948).

In 1949 I was invited by the Naval Ordnance Laboratory in White Oak, Silver Spring, MD to participate in the dedication ceremonies for the new supersonic wind tunnels and to give one of the lectures which were scheduled for that occasion. I took as subject "Borderline regions between aerodynamics and physics." I also worked at the laboratory as a consultant for twelve days. During a short visit to the California Institute of Technology at Pasadena, I was invited to stay again at that institution in the academic year 1950-1951 for a period of six months to work in the Hydrodynamics Laboratories collaborating in a project concerned with turbulent fluid motion and to give a series of lectures.

I also received some other invitations in addition to the one from the California Institute of Technology opening the possibility for staying in the U.S for an entire year. I had married again in 1941 and Mrs. Burgers and I sailed for New York in August 1950. We spent a few days in New York and Brooklyn; then we went to Cornell University, Ithaca, NY, to give a lecture and to do some work in the Department of Aeronautical Engineering. From Cornell we went to Cambridge, MA, to participate in the International Congress of Mathematicians, as a delegate both from the Royal Netherlands Academy of Sciences and from the International Union of Theoretical and Applied Mechanics. This was followed by a short stay in Providence, RI, to take part in a Symposium on Plasticity at Brown University. From there we went to Washington, DC.

I then had to take part in a symposium on problems of motion of the Earth's crust, which as mentioned before, had been arranged upon my recommendation by the International Union of Geodesy and Geophysics. I further worked for some time as a consultant at the Naval Ordnance Laboratory in White Oak, MD, and gave a lecture at the Brooklyn Polytechnic Institute and one at the Department of Aeronautics of the John Hopkins University in Baltimore.

On October 15 we left Washington DC and visited Dayton, OH, where I had to discuss some arrangements at the Central Air Documents Office referring to the printing of the proceedings of the first Symposium on Cosmic Aerodynamics. I gave lectures at Indiana University in Bloomington, IN, at the State University of Iowa, Iowa City, IA, at the University of Utah in Salt Lake City, UT. After a short visit to Death Valley and to the Hoover Dam, we arrived in Pasadena on November 1, 1950.

During my stay in Pasadena I worked daily in the Hydrodynamics Laboratories of the California Institute of Technology, gave a series of lectures, and took part in many seminars. On several occasions we were taken out by colleagues on trips or on larger excursions. I also was twice invited to give lectures at the Naval Ordnance Test Station, Inyokern, CA. In addition, I gave a lecture at Stanford University and one at the University of California, Berkeley, CA.

We left Pasadena on May 27th, 1951, visited the Grand Canyon, Flagstaff, Monument Valley in Utah, Santa Fe; spent one day in Denver and then went to Chicago, where I had to take part in the first U.S. National Congress for Applied Mechanics. From Chicago we returned to Washington DC. I had to give some lectures at the University of Maryland. Thereafter, we again went to Cornell University for work as a consultant at the Aeronautics Department; to Baltimore for a lecture and to work at the Aeronautics Department of the Johns Hopkins University; and to Langley Field, VA, for a lecture. After a further stay in Washington and work as a consultant at the National Bureau of Standards, we spent the last week in Brooklyn and sailed home in the end of August 1951.

Already during the Congress in Chicago, there had been discussions about a lasting connection with the University of Maryland (I know that the California Institute of Technology was likewise interested in having me). Soon after my return in Holland, I received an offer for a full professorship, which would make it possible for me to reside permanently in the United States.

Travelling through the United States and the many contacts we had made with people in that country had made a deep impression on Mrs. Burgers and on me. We had obtained an understanding of many aspects of life in that country and of its problems. We have been struck by the openness with which problems are discussed, and by the freshness of outlook and the eagerness to do things. We have been impressed very much by the way in which the problems of education are attacked and are held in the center of attention. There is an interest for experimenting, for looking towards new ways and a readiness to do work on those, which is extremely refreshing and which gives great hope for advance. After our return home we have talked about this with many of our acquaintances; Mrs. Burgers also gave lectures to some small groups. Moreover, we have been profoundly impressed by the great friendship, hospitality and courtesy with which we have been received everywhere and we have learned to love this country very much.

Before our marriage, which as mentioned took place in 1941, Mrs. Burgers had worked for 13 years in Rotterdam as an official of the Society for Fighting Tuberculosis. After our marriage, she became interested in child care, in particular related to children who cannot be taken care of by their parents or whose parents have been deprived of the rights of parenthood by a court decision.

Until 1950 she worked in Delft with the society "Tot Steun", a Protestant society for taking children in foster care. I mention this, because during our stay in Pasadena, Mrs. Burgers succeeded in making contact with organizations of a similar nature in the United States and she assisted at a regional congress on child care in Pasadena in April 1951. She took part in the discussion and was invited to give an informal talk about child care in Holland. She was also invited to visit some children in their foster homes. Having come across a book by Mrs. Ann Perrot Rose, "Room for One More", which treats the problem of taking foster children into one's family in a very clear and attractive way, she decided to translate this book into Dutch. After a publisher had been found and the necessary copyright permit was obtained from Mrs. Rose, the book has appeared in Holland under the title: "Er kan nog meer bij" (D. van Syn en Zonen, Rotterdam, 1952); 1800 copies have been sold.

One can see that both of us have done our best to promote a mutual understanding and respect between Holland and the United States.

Both of us love our country and the surrounding countries of Europe; we have seen much of England, France, some parts of Switzerland, Italy, Germany, and Denmark; in 1952 we were in Istanbul. What Holland and Europe have given to us is firmly anchored in our minds. Both of us have given all our energies to work in the interest of our country. Our connections with Holland and Europe will never be lost.

However, if, after having been in Europe for so many years, the opportunity would be granted for us to share the life of the United States, we would consider this as a great happiness. It would widen our horizon and we would like to collaborate with the Americans towards the realization of their ideals, so that we may become good and helpful inhabitants of that country.

Epilogue

The ideal of communism as it presented itself around 1918 promised to open a road towards a better understanding of social problems and towards widely improving conditions of living and of education, in a world which was deeply wounded by the bloody struggles of World War I. It was hoped that the revolution in Russia had liberated great forces which would bring immense progress in the world. What has happened in Russia, after an initial period which had looked promising, has blurred the ideal of communism so much, that it is totally impossible to reconstruct it.

If I would be asked to state my opinion about communism, I shall therefore be unable to give an answer, unless a clear definition is provided of what is meant by the word. However, comments can be made with respect to two forms in which this word is used:

Concerning the results of the so-called "communist government" in Russia, I am fully prepared to say that it has failed in realizing any of our hopes; instead of bringing freedom to man, it has destroyed freedom of discussion, freedom of expression and freedom of thought to such a degree that it will take a long time before the damage can be repaired. I do not even see reliable signs of a proper beginning towards such a restoration.

Concerning the activities of the communist parties, in so far as I can judge from the available information, nowhere do they give any evidence of independent constructive thinking. I am speaking here about the present situation; it was different 30 years ago. I do not know anything about trends in Yugoslavia. I add that in view of what has happened in Russia, no sensible and honest man can preach that adherence to Russian and to Russian thinking can bring happiness. To destroy social relations in democratic countries with the purpose of helping the policy of the present Russian Government is an activity which I fully condemn.

Editorial notes

Supplementary information provided by J. Herman Burgers, son of Jan Burgers: The statement of 1954 does not mention the work of Jan Burgers as secretary of the "Committee on Science and Social Relations" (ICSU) established in 1937 by the International Council of Scientific Unions. His service as a secretary led to interactions with the Chair of the Council, J.D. Bernal in the U.K., who was an outstanding scientist, but also an advocate of communism [6, 7].

Supplementary information provided by J. Robert Dorfman, colleague of Jan Burgers at the University of Maryland: The statement of 1954 does not mention the contacts of Jan Burgers with his fellow student Dirk J. Struiken, who had become a professor of mathematics at MIT, but had been suspended by MIT in 1951 after having been accused of "un-American activities" [8].

Happy ending

In February 1955 Jan Burgers submitted some additional reflections to the American Consulate supplementing the thoughts he had expressed in his earlier statement of March 1954 described above. After some further interactions with the American Consulate, Burgers was informed in June 1955 that an immigration visa would be issued and Burgers was formally appointed as a Research Professor at the University of Maryland starting September 1, 1955 in what was then called the Institute for Fluid Dynamics and Applied Mathematics.

References

1. F.T.M. Nieuwstadt and J.A. Steketee, eds., *Selected Papers of J.M. Burgers* (Kluwer, Dordrecht, 1995).
2. J.V. Sengers and G. Ooms, eds., *Autobiographical Notes of Burgers*, in: "JMBC 15 years" (JM Burgers Centre, The Netherlands, 2007), pp. 20-59 (Available at http://ipst.umd.edu/aboutus/files/burgers_autobiography.pdf; also at American Institute of Physics, Niels Bohr Library & Archives, College Park, MD 20740, USA).
3. M.J. Klein, *Paul Ehrenfest, Vol. 1: The Making of a Theoretical Physicist* (North Holland, Amsterdam, 1970).
4. D. van Delft, *Paul Ehrenfest's final years*, *Physics Today* 67(1), 41-47 (2014).
5. G. Alberts, *On Connecting Socialism and Mathematics: Dirk Struik, Jan Burgers, and Jan Tinbergen*, *Historia Mathematica* 21, 280-305 (1994).
6. J.D. Bernal, *The Social Function of Science* (Routledge & Kegan Paul, London, 1939).
7. A. Brown, *J.D. Bernal: The Sage of Science* (Oxford University Press, 2005).
8. G. Alberts and W.T. van Est, *Dirk Jan Struik, in Levensberichten en herdenkingen 2002* (Koninklijke Akademie van Wetenschappen, Amsterdam, 2002), pp. 107-114.

Acknowledgment

The editors (J.V.S. & G.O.) are indebted to J. Herman Burgers for valuable information and documentation concerning his father.

Appendix

Translation of my letter of resignation from membership of the communist party:
Delft, 22 September 1933.

To the Bureau of the division Delft of the CPH.

Dear comrades,

Here I inform you that I wish to end my membership of the CPH. Actually I have not taken part in the work of the party already during a very long time and neither is it possible for me to do this in the future. It seems better to prevent that a false situation will result.

J.M.B.