CURRICULUM VITAE

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Speicher Switzerland April 1992

I have been very lucky in my life. I have achieved more than I could dream of in my early youth. Now I have reached the chapter in life when it is time to strike a balance and to pay one's debts and the debts of gratitude.

Undoubtedly the immediate question arises who actually is Harald Perten? Hardly anyone but myself can answer this question. During the past 45 years I have been a constant traveller. My places of residence as from 1945 have been Stockholm, Sweden, 22 years – Rome, Italy one and a half year, Dakar, Senegal, four and a half years, Khartoum, Sudan, six years and now for the past 10 years Speicher, Switzerland. Despite my advanced age I remained officially in the services of the world's biggest manufactures of milling machinery – Buhler Brothers Ltd, Uzwil/Switzerland – as a consultant until the end of 1991. In this capacity I have largely applied my experiences from Africa.

I was born in Tallinn, capital of Estonia, in 1913, where my parents had a bakery. Oddly enough, my first recollections comprise bread making diffficulties. Estonia had serious sprouting problems of the cereals used for bread baking. As the grain in the fields begins to grow on the axe because of heavy rains there develops an enzyme, the alpha-amylase. During the baking process in the oven at 60 to 70 degrees centigrade, the alpha-amylase breaks down the gelatinized starch turning the bread crumb into a sticky mess. Such bread can not be sliced with a knife. As I remeber, the Estonia whole meal wheat bread had often to be eaten with a spoon, as it was impossible to cut it. The sprouting of rye and wheat in the field due to rains at harvest is a global problem, making the grain unusable for baking.

I am unable to forget an incident at the age of five or six. I had to cook a paste from potato starch which was used for fastening wallpaper. I boiled it for a long time until all the flour was gone but there was no paste! The reason was quite simple as I know it now. Potato starch has a very low resistance. It absorbs a lot of water at 55 to 65 degrees centigrade, but becomes liquiefied quickly at approximately 90 degrees centigrades.

All the starch becomes fluid at too much boiling. This recollection of my childhood is directly connected to my most important invention – "The Falling Number Method" – which measure the liquefaction of gelatinized starch in a boiling waterbath. This method enables to establish the baking fitness of wheat and rye flour. Nowadays – about 30 years later – The Falling Number Method has become globally standardized. In many countries the farmers receive the payment for the quality of wheat and rye according to the above mentioned method. In Sweden the Riksdag officially approved this method in 1964 and 25 years later farmers in Switzerland get paid for their grain according to the Falling Number standards.

The Falling Number Method is very simple. To begin with 7 g flour and 25 ml distilled water are mixed in a test tube and put into a boiling waterbath (100 degrees centigrade). Stirring begins five seconds later with a special stirrer/plunger at a firm pace (two movements in a second). This procedure continues until 60 seconds after start. The Falling Number is the total time including mixing interval measured in seconds, it takes for the stirrer/plunger to fall a fixed distance. A typical Falling Number value for bakery flours is 250 seconds. This value varies from 60 seconds to more than 400 seconds. When the stirrer/plunger's Falling Number value is less than 160 seconds, the wheat flour fails to produce good-quality bread. The normal level of wheat flour ranges from 200 to 300 seconds. In reality, the "Falling Number" measures the liquefaction of starch at 100 degrees centigrade which, completely unaware, I had experienced in my childhood.

After graduating from the Jakob Westholm Gymnasium in Tallinn in 1930, I graduated from Tartu University with an economics degree at the age of 20 in 1934. As an unforgettable recollection remains the day of my life when for my examination in chemistry I obtained the grade "maximum sufficit" by the professor in chemistry Reinhold Mark. He was at the same time the Dean of the Ecomonics Faculty. The grade "maximum sufficit" was given to only a few students every year.

After graduation from Tartu University I tried to revive my parents' bakery which at that time worked only at 50% of it's total capacity. And I was really lucky. In a short time the production was raised to 100% and remained at this level until our firm was taken over by the communists in 1940. Our bakery was nationalized without compensation and I was not permitted to continue working in my own firm.

In the autumn of 1944 when the Red Army was already in the vicinity of Tallinn I managed to escape dramatically in a small fishing craft in the hope to reach Sweden. My wife Hella and our oldest son Peeter were already there waiting for me. But our small overcrowded fishing-boat lost its steering-wheel at midnight in the middle of the Baltic Sea. We - the eight fugitivies in distress - were rescued by a passing German navy vessel which took us to the Latvian port of Lispaja. From there I landed in Danzig, Northern Germany, instead of Sweden. As the Red Army advanced towards Danzig in February spring 1945 I had to flee even from this town. The trains were overcrowded with refugees. I got away from Danzig at night crouching between two railway-carriages on buffers at minus 10 degrees centigrade.

At first I arrived at Stettin and from there I took myself to Berlin. Looking for food coupons I was caught at the Alexanderplatz underground station by an American airraid during which about 1000 tons of bombs were dropped overhead. In February 1945 finally my entry permit to Sweden arrived at the Royal Swedish Embassy in Berlin. I was reunited with my family in March which by that time had increased by our son Jaan.

Upon my arrival in Sweden, I tried to find work in my own capacity in the field of cereal chemistry. I managed to get a job as a test baker at the State Institute for Enterprise Development in Stockholm. My good luck was that beside my university degree, I had on me the Master Baker Diploma from Estonia. Later I was appointed head of the cereal laboratory. My boss was the well-known cereal chemist Sven Hagberg. Together we succeeded in applying many new ideas within the field of cereal chemistry.

After the death of Hagberg the International Association for Cereal Science and Technology with headquarters in Vienna accepted me as Sven Hagberg's successor and head of a study group, "Alpha-Amylase Activity and Sprouting". In the following years I succeeded in standardizing two methods, "The Falling Number" and the "ICC Colorimetric Method for the Determination of Alpha-Amylase Acitivity".

In May 1990, after 29 years of active work in the ICC I handed over my official tasks to my successor and paid my debt of gratitude to ICC for the possibilities which were granted to me during a long period of time. I then founded "Harald Perten Foundation" in Zürich. Its aim is to support ICC financially and to award successful cereal chemists. The first awards of USD 5.000 was granted in May 1990 to Doctor B.D. Appolonia, Head of the Cereal Department of the North Dakota State University.

Meanwhile, in 1967 I was summoned by the FAO (Food and Agriculture Organization of the United Nations) with headquarters in Rome to work for them. The purpose was to find possibilities in the Developing Countries to produce bread from local cereal species, mainly from millet and sorghum. After theoretical research in Rome I proposed to start experimenting on the spot. Thus FAO gave me the task to accomplish these experiments in Senegal. With the financial assistance from UNDP (United Nations Development Programme) I had to establish a complete cereals laboratory in Dakar which comprised a chemical laboratory and grain milling and baking units. I succeeded in inventing an entirely new technology for the local cereals species, namely the millet and sorghum. This innovation comprised milling and bread baking from new flours with up to 30% additions to wheat flour. The millet bread is extremely popular and its production is still maintained nowadays.

Based on my experience at the Senegal laboratory I was summoned by FAO with a new task to build up a new pilot-plant in Sudan for processing the sorghum and millet. The capacity of the pilot-plant was milling 500 kg sorghum per hour and baking 2000 bread-loaves per day of half a kilogramme each. To my great joy the sorghum flour created by the new technology became ever so popular that people came from a distance of several hundred kilometers to buy flour for festive occasions, such as weddings, etc. Good quality sorghum bread was produced with up to 30% additions to wheat flour.

Sudan has already two to threee mills for sorghum milling and preparations have been made by the government to make sorghum addition to wheat flour a compulsory matter. For my successful work I received as compensation from a former FAO president the "Sen award" as the best FAO expert chosen among 2000 field experts in 1978. Having completed the FAO assignment and on my retirement I received the invitation from the Buhler Brothers Ltd., in Switzerland – the milling machinery firm – to work as their consultant in millet and sorghum milling. I worked in this capacity until the end of 1991.

While staying in Switzerland I have succeeded in inventing another important method, namely to establish the quality of gluten (the wheat flour protein indissoluble in water) and cereals. The gluten quality is an important factor for the wheat flour quality. However, there are still no internationally approved methods for its determination. My new invention for gluten determination is quite simple. Instead of fixing the gluten quality subjectively by stretching it between ones fingers, the gluten is centrifuged during one minute in a special colander/sieve. The percentage of the total gluten amount which fails to penetrate the sieve is the "Gluten Index".

The comparative international analyses have already shown good results. Both ICC and AACC (American Association of Cereal Chemists) have already officially standardized the above-named method.

In addition, I have developed a completely new and speedy method (under five minutes) to determinate the "Fungal Alpha-Amylase" in enzyme samples and flour additions. The fungal alpha-amylase is heat sensitive and inactivates at about 55°C so that the standard Falling Number method which works at 100°C can not be used. Changing the water bath temperature to 30 degrees centigrade excellent results were received. However, a special substrate pregelatinized wheat starch is needed. The substrate will be available soon.

As can bee seen from my curriculum vitae, the main part of my life is WORK. For this reason, naturally, my wife and sons as well as my friends have suffered because of my lack of time for them. Despite all this I have achieved good results even as regards my hobbies. As a young man I won the motorcycle competition in the side-car class of Estonia's Grand Tour in 1938. At the World Championships 1946 in Stockholm I won the gold medal and a bronze medal in rifle-shooting. I won twice the Swedish Shooting Club master competition in 1946 and 1947 when shooting from lying position. I founded the Estonian Tennis Club "SET" in Stockholm 1952. I was the club champion a few times in doubles and am still with them as a honorary member. I have worked as a photo reporter for the Estonian Press in Stockholm and have made films during my first years of my stay in Sweden. I was the editor of the sound film about the performance of the Ernst Idla Gymnasts at the Stockholm Light Festival in 1949. Despite all these activities WORK has always come first and it will be like this as long as my days will last.