



Leopoldina

news

German National Academy of Sciences Leopoldina

Halle, 13 December 2012

04 | 2012

Annual assembly focuses on global change

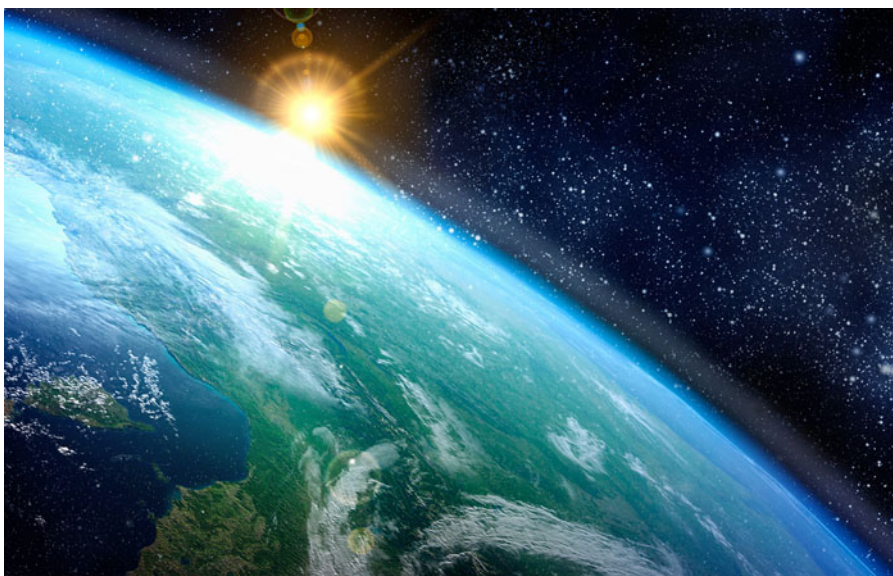


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The challenges of global change were the theme of the Leopoldina's annual assembly 2012, which took place from 22 to 24 September in Berlin. The venue for the event was Langenbeck Virchow House, where 300 guests engaged in discussions on the far-reaching and interconnected changes and phenomena of today and tomorrow, such as environmental degradation, water shortages, biodiversity loss, famine, mega-cities, epidemics and unstable financial systems.

"The Leopoldina's annual assembly is an open forum where science can discuss its role with regard to global change and the challenges it presents," said Leopoldina President Prof. Jörg Hacker

ML in his opening speech. The academic organiser of the annual assembly, Prof. Detlev Drenckhahn ML, left no doubt as to why the Academy had chosen this theme for its annual assembly: "This is an urgent issue. Scientists predict that the coming 50 years will have a dramatically adverse impact on humankind."

The 28 talks held during the course of the annual assembly covered a broad spectrum of relevant topics, from analysis of the current situation, descriptions of the challenges ahead, to possible solutions and discussions of the consequences for social policy. (mab)

► For a full report of the annual assembly, please see page 2

Dear members

and friends of the Leopoldina,

we are coming towards the end of another busy and successful year. The German National Academy of Sciences Leopoldina has commented



on important issues, such as demographic change and the transformation of Germany's energy system. The Leopoldina has used its scientific expertise to foster public debate

on important issues like the expansion of bioenergy. The Leopoldina has also been active at international level, for example in the run-up to the G8 summit at Camp David, USA.

This edition of the newsletter features a full report on the Leopoldina's 2012 annual assembly, which was held in Berlin in September and focused on the topic of "The Role of Science in Global Change". At this point, I would like to extend my warmest thanks to Leopoldina member Prof. Detlev Drenckhahn ML, who organised these important and fruitful discussions on a wide range of challenges facing the world today. Looking back on the Leopoldina's wealth of activities in 2012, I am optimistic and curious about all that the New Year will bring. And on that note, I wish you a wonderful festive season and a very Happy New Year!

Kind regards,

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The role of science in global change

The talks at the Leopoldina's annual assembly took an interdisciplinary approach to outlining the problems involved and their potential solutions

What role can and should science play in the process of global change? The Leopoldina's annual assembly, held from 22 to 24 September at Langenbeck Virchow House in Berlin, included 28 talks dedicated to answering this question.

Due to the financial crisis, climate change and population growth, the world we live in is changing fast, with dramatic consequences for nature and humankind. "But where there is danger, a rescuing element grows as well", said Leopoldina President Prof. **Jörg Hacker** ML in his concluding speech, quoting German poet Friedrich Hölderlin. With these words he emphasised that science can provide solutions to cope with the changes and challenges ahead.

In his talk at the start of the three-day annual assembly, academic organiser Prof. **Detlev Drenckhahn** ML (Würzburg) defined the term global change as consisting of three categories: environmental change, demographic change, and globalisation in general. He set the focus of the annual assembly on environmental change, to fit with the Leopoldina's particular expertise in this area. The talks were widely varied and included analyses of the present situation, descriptions of the challenges ahead, approaches to solving them and discussions of the consequences for social policy.

After welcoming addresses by Dr **Georg Schütte**, State Secretary at the Federal Ministry of Education and Research, and **Marco Tullner**, State Secretary at the State of Saxony-Anhalt's Ministry of Science and Economics, climate researcher Dr **Thomas Mölg** (Berlin) was awarded the Leopoldina Early Career Award. Dr Mölg then presented his research on developing models to simulate and predict complex interactions in highly intricate systems.

Prof. **Rüdiger Glaser** (Freiburg/Br.) and Prof. **Stefan Dech** (Würzburg) opened Session I (The Earth in Global Change) by presenting their insights on "Global change viewed from space". Prof. Glaser's impressive image sequences illustrated the rapid development of

mega cities, glacier melt and the spread of desertification. He said the effects of these changes were new. In the past, such problems tended to be regional and thus only had an impact on those who caused them, but today, the problems are of global significance and their effects span huge distances and timeframes. According to Prof. Glaser, population growth is driving these developments, not just in terms of the sheer number of people on Earth, but also because of their changing lifestyles. "Wanting to have everything everywhere all the time is not a viable path for the future," said Prof. Glaser.

„WE ARE SITTING ON SPACESHIP EARTH TOGETHER“

Prof. Dech presented the advantages of remote imaging from space. Its ability to deliver constant, wide-ranging and objective data makes it an indispensable tool for understanding and assessing global change. The measurements are fed into models that can be used to make better forecasts, for example about the weather. Observing the Earth from space has also elicited a change in the way we see ourselves: "We are all now fully aware that we are sitting on Spaceship Earth together", said Prof. Dech.

In the talk that followed, Prof. **Jochim Schellnhuber** ML (Potsdam) spoke about the Earth's ecological limits ("Planetary Boundaries - Guardrails for Humankind"). He said that we have already left the "OK" zone in three areas: the climate, biodiversity, and the phosphorous and nitrogen cycles. To avoid shooting further beyond "the guardrails for humankind", he said we must reduce carbon emissions to zero by 2070 – not just for the sake of the climate, but also to protect biodiversity, world food security and global health. Prof. Schellnhuber presented two scenarios for how temperatures may develop. Either the human race fails to change its ways and the Earth's temperature will steadily rise by 8 °C by 2300, or we reach and uphold an effective climate agreement and limit global warming to 2 °C. However, all the prognoses include several natural tipping

elements, or sub-systems in the ecosphere, such as ice sheets and the monsoon regimes, whose complex interactions are still barely understood.

Session II opened with a lecture by Prof. **Richard Burdett** (London), who focused on the challenges facing the cities of the future in his talk entitled "Global change of the world population and urbanisation". By 2050, three quarters of the world population will be living in cities. Using Mumbai as an example, Prof. Burdett showed how cities grow and what factors influence their growth. Developing countries in particular do not have the resources to cope with this expansion, he said. Urbanisation also exacerbates the social tensions that arise from the increasing pluralisation of cultures and lifestyles, which were partly the cause of the riots in London and Paris. Prof. Burdett believes social problems are very closely linked to architecture. The aim must be to build sustainable cities where quality of life increases but energy consumption does not.

Next, Prof. **Volker Mosbrugger** ML (Frankfurt/Main) spoke about the "Global change of biodiversity". Although the true extent of the loss of biodiversity is unknown, the available data suggests that the present-day extinction rate is 100 to 1,000 times higher than the regular extinction caused by evolution. He listed changes in land-use, climate change and over-fertilisation as the main causes. Research on previous mass extinction in the Earth's history suggests it takes around a million years for biochemical cycles to recover and five million years for biodiversity to reach previous levels. Prof. Mosbrugger therefore urged that "exploiting nature must be costly". He emphasised that the loss of biodiversity affects all levels of life from molecules and genes to individual species to entire ecosystems. We are only just beginning to understand the impact this loss will have on the Earth System and on humankind.

Prof. **Ralph Hertwig** ML (Basel) then gave a talk examining why it is so difficult to draw the right conclusions from obvious dangers. His paper, entitled "Communicating risks in a world of

global change“, outlined some of the difficulties of communicating effectively on issues such as terrorism, the financial crisis, and climate change. Even though the world has, in fact, become a safer place in some respects – road safety, for example – people today feel more insecure and vulnerable than they used to. What exactly we are afraid of depends above all on the dimensions known/unknown and chronic/catastrophic. We perceive unknown risks with potentially catastrophic consequences to be particularly threatening. The position of climate change on these scales varies depending on individual experience, for example, on whether or not someone has been subject to extreme weather conditions. Prof. Hertwig explained that this makes it particularly difficult to effectively communicate the associated risks, as does the general public’s lack of trust in science.

“I don’t know how well money fits in with the other major topics that are being discussed here. Perhaps the connection is risk.” With that, Prof. **Hans-Werner Sinn** (Munich) bridged the gap to his talk “Financial systems in global change: the European balance-of-payment crisis“. Prof. Sinn traced the development of the euro crisis and looked at the measures that have been undertaken so far to tackle the situation. He was particularly critical of the failure to set up adequate parliamentary controls. He went on to focus on a phenomenon that has received little attention so far: Target balances. These refer to debts that the central banks of crisis-hit countries like Greece owe to the European Central Bank. The debts have been rising rapidly ever since the euro crisis began. Prof. Sinn put the total volume at € 1,087 billion – and the biggest creditor in all of this is Germany’s Bundesbank. For the Bundesbank to be able to claim its money back, the debtor has to be a member of the eurozone, and the overall system of the single currency has to work. Prof. Sinn concluded by saying: “Germany is trapped. If the euro collapses, we will be left claiming repayments from a system that no longer exists.” He sees the Target system as “the Achilles’ heel of the European central banking system, a piece of bad design that needs to be fixed.”

Session III, entitled “Challenges of the Global Change I“, opened with Prof. **Stefan Rahmstorf** (Berlin) giving a talk on „Climate change and its impacts on the

Prof. Ernst Ulrich von Weizsäcker: “Nothing less than a technical revolution will do”

In his lecture on Saturday evening, entitled “Nothing less than a technical revolution will do“, Prof. Ernst Ulrich von Weizsäcker (Emmendingen) concluded that “Germany’s greatest strength is technology“. He said this was keeping the country competitive and making it the envy of other countries, like the US and the UK, as Germany is succeeding in fostering and strategically greening its industry. However, he stressed that it is more important now than ever to monitor the direction of these developments. Progress has to be sustainable and aim to ensure high standards of living with a smaller ecological footprint. “Business as usual with a lick of green paint won’t be enough“, he cautioned.

Prof. Weizsäcker warned that “we are playing with fire” when it comes to the effects of climate change.

He said that expanding renewable energy capacity makes sense to a certain extent, but can only be effective to a limited degree. And that we have the technology for carbon capture and storage (CCS), but it is not yet profitable. Photovoltaics, he added, are expensive, no one wants a wind turbine in their immediate vicinity, and hydropower too has its limitations. Von Weizsäcker stated that grid expansion was also proving difficult due to a lack of investment incentives caused by policymakers’ insistence on separating electricity production and grid operators. Even if, despite these difficulties, OECD member countries were able to cover a fifth of their energy needs with renewables, that would still only be enough to cover the energy needed by three percent of the world population. He said that a situation akin to the game of pick-up sticks had developed in the negotiations on a climate change agreement: “Whoever moves first, loses“. Developing and newly industrialised countries, in particular, are not prepared to compromise on economic development to protect the climate. Thus is why Prof. Weizsäcker is recommending a whole new approach, where the country that moves first wins rather than loses. He says our focus must be first and foremost on avoiding carbon emissions and reducing our energy needs. Using examples like 1.5 litre cars, passive houses and LED lights, he showed that we have far from reached the full potential of energy saving technologies and called for more efficient and intelligent planning in agriculture, logistics, urban and transport infrastructure, and recycling. Germany could play a pioneering role here and find adequate solutions, he said. This huge transformation would have to start as soon as possible and be underpinned by government intervention. “We must regulate by means of prices. That is the only chance we have – even if politicians still refuse to accept this so far“, said Prof. Weizsäcker. He advocated linking energy and raw material prices to efficiency gains in order to encourage industry to focus on sustainability. There could be exemptions for the socially vulnerable and industries that would otherwise move abroad. Prof. Weizsäcker said Europe and Asia should press forward, without the US if necessary, to ensure such regulations become international standards. This could create a “winning alliance“, he said. (mik)



Photo: Markus Scholz

earth system“. Prof. Rahmstorf explained that the concentration of carbon dioxide in the atmosphere has been rising fast for the past century and that this is entirely down to human activity. He said that this had caused the average surface temperature of the Earth to rise by about 0.8 °C, and that it was also at the root of the unprecedented number and severity of extreme weather events recorded in recent years. Climate change is therefore already having a serious impact on our health. As an example, Prof. Rahmstorf cited the heatwave of 2003 – an event that caused the deaths of 75,000 people in Europe. Climate change has gathered pace so fast that in several areas it is now exceeding the forecasts of the Intergovernmental Panel on Climate Change. If this situation continues in a negative direction (leading to global warming of between 4 and 7 °C), then the Earth will become “an entirely different planet”.

Prof. **Ferdi Schüth** ML (Mülheim/Ruhr) spoke about „Challenges in transforming our energy system“. He focused on various aspects of the “Energiewende“ – the sum total of all the steps Germany and indeed other countries are taking to transform their energy systems – paying particular attention to problems concerning grid stability, the cost of solar power, the challenge of storing electricity, and the limits of lithium-ion batteries in powering the shift to electromobility. Prof. Schüth concluded that by 2050 our energy supply has to be spread across more pillars than is currently the case. For that to happen, we need to integrate renewables better into the overall system by improving our grids and finding storage solutions that really work. Heat production, said Schüth, should be decoupled from electricity and transport. That calls for innovations and planning, combined with supply security and affordable costs.

The next speaker was Prof. **Armin Reller** (Augsburg), who gave a lecture on the “Criticality of mineral resources.“ He said that the number and diversity of functional materials, particularly metals, have increased enormously since 1900. A modern solar cell, for example, contains at least nine different metals. Many of these materials only exist in small quantities and are also hard to substitute. Prof. Reller therefore called for limiting their use to “existential technologies that we all depend on“. He also said that an

awareness of the finite nature of the deposits should feature early on, during production. Rare earths should remain “intact” – i.e. they should not oxidise or form compounds that would lock them away forever. In turn, this would create greater scope for recycling. With the right logistics and technologies, a lot of the metals that have already been used can be extracted. Reller said the potential is vast: “Europe has become an extremely rich mine.”

IMBALANCES BETWEEN ETHNIC GROUPS CAN LEAD TO AN OUTBREAK OF VIOLENCE

Prof. **Lars-Erik Cederman** (Zurich) opened Session IV on Sunday with his talk on “Political violence and global change“. He presented empirical data that gave good cause for optimism, as they showed that the world has become more peaceful overall. Since the mid-1990’s at least, the number of conflicts raging worldwide has been falling. Prof. Cederman said that the media often exaggerated the dangers (“The world is hardly going up in flames.“). The most severe forms of political violence today are civil wars, which tend to be fought on ethno-nationalist grounds. Violence often breaks out when individual ethnic groups are excluded from political processes and/or when social imbalance exists between ethnic groups. Cederman therefore spoke in favour of power sharing and regional autonomy. He also argued for applying statistical methods in conflict research so as to avoid exaggeration, produce a more accurate picture and reliably identify trends.

Prof. **Joachim von Braun** (Bonn) picked up on the subject of violent conflicts in his talk, “World nutrition and water supply in the global change“. He used the Global Hunger Index and a map of world conflicts to demonstrate that there was a high degree of correlation between the two. This, he said, makes the rising price of food especially worrying. On the one hand, climate change and land and water shortages mean that there is less food available. On the other, demand for food is rising because the population is ballooning, we are using crops to produce bioenergy instead of food, and investors in financial markets are speculating on food prices. Prof. von Braun highlighted the long-term problems we are facing. They include an increasing demand for

meat and milk in regions that are becoming richer and more urbanised, and the vast amount of water that the agricultural industry consumes: “The amount of water we currently consume is not sustainable.“ On top of that, there are the short-term problems. These mainly concern prices spiking due to speculation on the commodities markets, and demand shocks that immediately cause food shortages which hurt the poorest people in the world most. Prof. von Braun therefore argued in favour of promoting growth in the agricultural industry, of improving coordination to ensure sustainable land-use, of curbing speculation and of expanding nutritional and social programmes.

In his talk on „Changes in the global burden of cancer“, Prof. **Paul Kleihues** ML (Zurich) predicted that tumours are a problem we will have to contend with for a long time to come. Wealthy nations, in particular, are affected, because their inhabitants are often exposed to carcinogenic substances such as asbestos from a relatively young age, begin smoking earlier and frequently have unhealthier lifestyle habits. Unfortunately, however, other countries in the world appear to be paying little heed to the lessons they could learn from the experiences of Western industrialised nations. Asbestos is still being widely used in newly industrialised nations, and in China, the number of smokers is rising dramatically. In the words of Prof. Kleihues: “They are following us down the path to disease and death“, even though campaigns to reduce tobacco consumption, for example, have shown that prevention is the most effective tool of all. Recently such efforts have increasingly focused on changing unhealthy eating habits and combatting obesity, which are associated with a higher risk of colon, breast and prostate cancer, and the food industry has been the target of growing criticism.

The talks in Session V introduced a number of potential solutions to problems of global change. Prof. **Hans Konrad Biesalski** (Hohenheim) spoke on the problem of “hidden hunger“, a term describing deficiencies in micronutrients such as iron, zinc, iodine and vitamin A. (“Combating micronutrient deficiencies, hidden hunger“). Hidden hunger occurs in industrialised nations, as well, but the problem is particularly severe in developing countries because diets are largely based on cereals, and these staple foods

either contain micronutrients only in very small quantities or in forms that are not readily bioavailable. The effects often only become apparent much later when clinical signs of malnutrition develop, but the immune system is affected at a much earlier stage, leading to higher susceptibility to various diseases. Biesalski explained the vicious cycle of hidden hunger: Malnourished mothers give birth to babies that are either premature or have a low birth weight. The development of these babies is generally stunted, impairing their chances of getting a good education and growing into healthy, productive adults that can find well-paid jobs. Thus they frequently remain mired in poverty and suffer from malnutrition as adults themselves. In addition to taking steps to ensure that expectant mothers are more adequately supplied with micronutrients, Biesalski stressed the need for a more qualitative perspective on securing global food supply. Considering the importance of micronutrients for human health and productivity, he emphasised that these should be taken into account when calculating nutritional needs rather than basing such calculations on calories alone.

Prof. **Thomas Mettenleiter** ML (Riems Island/Greifswald) looked at the question of whether the threat posed by diseases transmitted from animals to humans, such as BSE or avian flu, is likely to increase in the future. In addition to speaking about the “Prevention of zoonoses”, Prof. Mettenleiter demonstrated that infectious diseases have largely been eradicated among domestic animal populations in Germany and that foodborne campylobacter and salmonella infections now top the list of zoonotic infections. He then elaborated on the growing threat posed by “exotic” infectious agents that are now appearing in temperate regions in the wake of global change. Increased mobility is not the only factor contributing to this situation. Larger populations of domestic animals are also a relevant factor here: “More animals and more humans mean more contacts between them and more zoonoses.” Because zoonoses are transmitted in many different ways, there is no one simple solution to eliminating them, but food hygiene, veterinary hygiene, educating the public, vector control, vaccinations and continuing research can all contribute to keeping them in check.

In his talk, Prof. **Karsten Fehlha-**

ber ML (Leipzig) focused on ways of ensuring that the animal products we eat are safe and healthy (“Safeguarding healthy animal products”). He emphasised that while foods of animal origin are safer today than at any time in history, consumers are also more discriminating than ever before. Global change is presenting new challenges. More and more meat is being produced, especially poultry, and food products of animal origin are being shipped around the globe, making controlling quality and safety more difficult. The trend towards free-range farming associated with growing concern for animal welfare also poses new health risks for consumers, as chains of infection that were disrupted in conventional factory farming can now close again. Prof. Fehlhaber stressed that scrupulous adherence to basic hygiene precautions by personnel working in food wholesale/retail and restaurants and by consumers themselves is the most important means at our disposal for avoiding foodborne illnesses.

THE NEED FOR INNOVATIVE APPROACHES TO AGRICULTURE

Prof. **Wilhelm Gruitsem** (Zurich) opened Session VI by speaking about the “Challenges of green agriculture and the prospects for green gene technology”. He demonstrated that the growing world population and rising per capita food consumption mean that we will have to produce 50 percent more food in the future. To meet this challenge, we need to develop innovative approaches to agriculture that require less water, less fertiliser and less land. If we want to achieve this, we will have to radically rethink the way we cultivate crops. In particular, we need to pay much more attention to the original biodiversity of an area: “We have to understand that biodiversity and ask ourselves: what used to live here?” Using cassava and Golden Rice as examples, he showed how gene technology can play an important role in these efforts. He called for consumers and regulators to change their attitudes: “Gene technology can be of real benefit.”

Prof. **Folkhard Isermeyer** (Braunschweig) explored the “Dilemma between energy crops and food crops”. Agribusiness is booming, and bioenergy is playing an increasingly important role in the industry. But its potential is limited. For

instance, if Germany wanted to cover 100 percent of its energy needs with crops, it would have to dedicate 100 to 200 million hectares of space to this purpose. However, just 12 million hectares are available – and that includes the space needed to grow food. No matter where you look in the world, it is almost impossible to develop large new areas of agricultural land without damaging the environment. Prof. Isermeyer said that most types of bioenergy are not particularly efficient and that linking food prices to crude oil prices is a risky move because it can exacerbate food crises in developing countries. He concluded by saying that bioenergy is not crucial to transforming the energy system, but that the obsession with “regionality” was complicating the issue.

In her talk, entitled “Red gene technology and its perspectives”, Prof. **Angelika Schnieke** ML (Munich) explored the question of how the genetic modification of animals can help improve human health. New gene technology allows scientists to use “molecular scissors” to introduce new genetic traits or modify existing traits more and more efficiently. These new developments not only open up new opportunities in medicine (e.g. the production of safe, affordable medications in greater quantities and of organs for xenotransplantation), they also make it possible to improve the health, productivity and fertility of domestic animals by using new methods that are complementary to conventional selective breeding. To make the most of this potential, however, it is necessary to first convince the general public that genetic engineering does not always spell danger.

Dr **Boris Worm** (Halifax, Canada) then explored the subject of “Sustainable fisheries and aquaculture”. He identified areas where overfishing is putting certain species at risk of extinction. Although fishing activity has increased considerably, global catches have been stagnating since about 1990, simply because overfishing means fewer fish are available. Dr Worm called for better regulations to ensure we use our waters sustainably. These might include tighter catch restrictions, more protected areas, and improved worldwide monitoring. This could help increase stocks and – with fixed quotas – make fishing more effective again. It could also reduce collateral damage caused by trawls, bycatch and un-

intentional interventions in food chains. “Sustainability is feasible. It makes sense for the environment, for the economy and for our food supply. The only thing missing is the political will to make it a reality.”

Prof. **Georg Teutsch** (Leipzig) opened Session VII with a talk entitled “Sustainable water management: a global challenge for this century“. He argued against using data average values for entire continents and advocated taking a local and regional approach. This, he said, would make it possible to use complex monitoring and control systems for forecasting rainfall, flooding, and flow paths of water. Prof. Teutsch addressed phenomena such as flooding caused by land-use change, chemical pollution of flowing surface water, and the “virtual water flows” of our globalised economy. The global population is growing, but supplies of fresh water are dwindling – that presents us with a major challenge. One way of solving it would be to close the water cycle through adequate wastewater treatment.

The next contribution was by Prof. **Ottmar Edenhofer** (Berlin), who talked about the “Basic points of a global climate and energy policy“. He posited that the scarcity we are facing in the 21st century does not primarily concern a lack of resources in the ground, but a lack of storage space in the atmosphere. The atmosphere is a global public good and if our emission volumes remain unchanged, it will soon be “full to capacity” – and that will have unforeseeable consequences for us all. Prof. Edenhofer called for making the global economy carbon-free by the end of this century: “An adequate climate policy would stipulate that the majority of existing resources must stay in the ground. In other words: owners of coal, gas and oil must be dispossessed of their property.” This is why climate negotiations are so difficult. Newly industrialised countries in particular continue to use a lot of fossil fuels, since history suggests that economic growth is impossible without them and, therefore, their emissions. However, Germany’s transformation of its energy system could provide the world with a shining example of how we can break the link between economic growth and increasing emissions.

Prof. **Robert Pitz-Paal** (Aachen) then gave a talk entitled “Prospects for solar thermal power plants“. He explained

that these plants offer great potential because, when combined with a suitable storage solution, they can achieve similar capacities to a conventional power plant and can make the electricity available as needed. By using different sized storage facilities and turbines, the plants can be designed to suit diverse load requirements. Prof. Pitz-Paal said that if prices continue to fall, the technology will become competitive between 2020 and 2030. He pointed to the Middle East and North Africa (the MENA region) as being the ideal location for solar thermal power plants (STTPs). This is down to the immense amount of sunlight available here and because the overall climate is a good match for the technology. Investing in STTPs could also help drive economic growth in the region and, possibly, achieve a more balanced society.

THE BUILDING MATERIALS OF THE FUTURE SHOULD CONSUME FEWER RESOURCES

In his lecture, **Peter Stemmermann** (Karlsruhe) spoke about “Decarbonising in the building materials sector“. He explained that, since cement production currently accounts for five percent of global greenhouse gas emissions, better cement can help protect the environment. Demand for the material shows no signs of abating. Among the main drivers are newly industrialised countries, which are investing heavily in infrastructure. He said that a new kind of cement is currently being developed that requires up to 50 percent less energy, and called for similar innovations in other building materials. Given the size of the role that the building sector plays in value-added, researchers are not paying nearly enough attention to this field. The building materials of the future should consume fewer resources during production, improve insulation, last longer, and offer scope for recycling.

Session VIII, which closed the annual assembly on Monday, focused on the “Political and social challenges and approaches of problems in the global change“. Prof. **Axel Börsch-Supan** ML (Munich) explored the „Challenges of global societal change“. His talk presented three interconnected trends: globalisation (and the powerful feedback effects it produces between distant countries), the transition to a knowledge-based society, and our aging population. Prof. Börsch-Supan

said that while these developments demand flexible social systems that are capable of adapting to change, real-life society is actually nothing like that. Using pension insurance as an example, he explained the problems that we could face in future. The lack of flexibility in Germany means that the country has an extremely expensive pension system that, ironically, is also responsible for high levels of poverty among the elderly. Demographic change will also cause problems in countries like India and China, which have no social systems that function on a national scale. Prof. Börsch-Supan argued in favour of addressing problems from a more international perspective in the future.

In the next talk, Prof. **Ulman Lindenberger** ML (Berlin) illuminated the “Challenges to ageing societies“, in particular the challenge of maintaining cognitive abilities in old age. He outlined the changes that occur in the brain as it ages – loss of grey and white matter and shrinking of the hippocampus – and how behaviour affects perceptual and cognitive abilities and memory. He explained that individual differences in cognitive abilities increase with age and that people age at different rates. He introduced the concept of “brain maintenance“, which aims to instil habits and behaviour in young years that allow cognitive abilities to be maintained into old age, and touched on the question of whether these abilities can be enhanced in adulthood through training and if so, to what extent. While it has been proved that skills can be improved through training, when it comes to abilities, all scientists can venture right now is “a cautious maybe”.

Prof. **Johannes Siegrist** (Düsseldorf) spoke about “Health policy measures towards reducing the burden of chronic diseases“. The spectrum of diseases affecting the world’s population is increasingly shifting towards chronic degenerative diseases, which now make up 70 percent in industrialised nations compared to 30 percent for infectious diseases. Moreover, this trend is spreading from North to South – as lifestyle habits change in the wake of economic growth, the populations of developing countries are increasingly affected by lifestyle-related diseases such as cardiovascular disorders and cancer. Prof. Siegrist also pointed out the role of socioeconomic factors – higher levels of education and income are associated with healthier lifestyles

and lower risk for disease – and stressed the importance of prevention in reducing the burden of chronic disease. Preventive efforts could include campaigns to educate the public on behaviours that are damaging to health, such as smoking, and introducing new legal regulations. The world of work and its psychosocial functions are of particular significance in this regard, as they have a major impact on health. More autonomy, fairer pay and investing in continuing education and life-long learning can help create working conditions that are conducive to better health.

In the final talk in Session VIII, Prof. **Renate Schubert** (Zurich) spoke about the “Instruments for changing values and behaviour of societies to reach sustainable resource management“. While new technologies can offer approaches to solving the problems of climate change and the growing scarcity of resources, sufficient incentives need to be offered if such technologies are to be developed and implemented. If we are to meet these challenges, sanctions alone will not be enough – it will be necessary to effect a change in societal values. Prof. Schubert described how values influence behaviour and pointed out that social and psychological factors often prevent us from actually behaving as we could, and as we would like to in principle. She went on to outline various approaches that could contribute to changing attitudes and influencing behaviour: clear policies, suitable institutions, appropriate economic incentives, information and communication.

In his concluding speech, Leopoldina President Jörg Hacker confirmed that the problem is not a lack of viable approaches, but a failure to implement them. He said that the various talks given at the annual assembly had offered a wealth of stimulating ideas and inspiration for further activities. (mik)

► *The papers will be published in summer 2013 in a volume of the Nova Acta Leopoldina on the annual assembly.*



Photo: Markus Scholz

Sir John Beddington: “Population and climate impacts on energy, water and food security”

The closing lecture at this year’s annual assembly was held by Prof. Sir John Beddington (London), the British government’s chief scientific adviser. In his talk, entitled “Population and climate impacts on energy, water and food security: The future and the inescapable challenges of the next 15 years“, he focused on three major challenges: population growth, urbanisation and climate change. He said that the world population would grow exponentially over the coming decades, especially in Africa and Asia. Urbanisation presents a similar picture: by 2050, there will be 800 million more Africans living in cities. He explained that urban populations are far more vulnerable to natural disasters, extreme weather conditions and epidemics because, in cities, so many people are concentrated in a relatively small area. According to Prof. Beddington, most climate change predictions to date have been too cautious. However, he said that it was difficult for the scientific community to agree on reliable forecasts and urgent warnings about imminent dangers because researchers tend to be reluctant to advocate a mainstream opinion. As he put it: “Everyone wants to be a little Galileo.” He emphasised that climate change, population growth and urbanisation are closely interrelated. Sir Beddington predicted that by 2030 the world will need 38 percent more food, 40 percent more water and 54 percent more energy, which would cause carbon emissions to rise by 37 percent. There are promising strategies for addressing problems in global food supply, but these are hampered by fears about green genetic engineering, for example. Research and the right investments and policy initiatives are essential to securing a sufficient water supply. Given the rising need for energy, it is hard to see how carbon emissions might be reduced. He suggested our best solutions may lie in completely new technologies, like carbon capture and storage or CCS, although wind energy, biofuels and nuclear power also play an important role. “The forecast for 2030 is really quite frightening“, he concluded. He said that after 2030, it will be essential to control the birth rate to keep the growth of the world population in check; otherwise there will be 15 billion people on Earth by the end of the century. The true effects of global warming will also become reality between 2070 and 2110: sea levels will rise, harvest yields dip, glaciers melt and droughts will become more prevalent. In the discussion that followed, Sir Beddington called on scientists to take a more active role in drawing the media’s attention to the enormous challenges ahead. (mik)

Communicating risks: Statement of the Leopoldina and the French Académie des sciences

In late October, Italian scientists have been sentenced for supposedly not having warned sufficiently against the severe earthquake of L'Aquila 2009. On occasion of this verdict, the German National Academy of Sciences Leopoldina and the French Académie des sciences published a statement concerning the handling of risks situations by scientists on 12 November:

ON THE SCIENCE-BASED COMMUNICATION OF RISKS FOLLOWING THE RECENT SENTENCING OF ITALIAN SCIENTISTS

On 22 October 2012, a court in L'Aquila sentenced seven members of the Italian National Commission for the Forecast and Prevention of Major Risks to prison terms of several years. The verdict has sparked a worldwide discussion on the legal aspects of the accountability of scientists who advise government institutions. Scientists must participate in this discussion actively and as objectively as possible. The German National Academy of Sciences Leopoldina and the French Académie des sciences therefore express-

ly support the Accademia Nazionale dei Lincei, the Italian National Academy of Sciences, in its endeavours to set up an independent expert commission of geologists and legal experts. The role of this commission will be to examine the scientific and legal aspects of the L'Aquila verdict.

Scientific research is substantially motivated by the aim of providing greater protection against natural disasters. In the case of uncontrollable events such as cyclones, earthquakes and volcanic eruptions, scientific forecasting methods are becoming increasingly important. Scientists and representatives of state institutions must work together with mutual trust in order to inform the public responsibly, and on the basis of reliable data, about possible risks.

In their risk forecasts, scientists assess the probabilities of future events. Probability-based statements are per se fraught with uncertainty. At all times, scientists must communicate this fundamental fact as clearly as possible. This is no easy task when it involves communicating with public-sector decision-

makers and concerned members of the public who expect clear forecasts. However, scientists cannot – and should not – absolve themselves of this responsibility.

It is very unfortunate when the trust between scientists, state institutions and the affected members of the public is profoundly damaged. This occurred as a result of the devastating earthquake in L'Aquila on 6 April 2009. It is thus in the interests of all those involved that the events are reconstructed comprehensively, precisely and objectively. Only in this way is it possible to evaluate on a reliable basis whether the persons involved performed their duties appropriately in the situation in question.

The scientific community must also take an active part in the necessary examination process from the start. The decision of the Accademia Nazionale dei Lincei to set up an independent expert commission to examine the L'Aquila verdict is a clear and decisive signal in this regard.

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Abbreviations

ML = Member of the Leopoldina

The statement critical of bioenergy under discussion

A panel discussion giving voice to the different viewpoints that have arisen in response to the publication of Leopoldina's recommendations was held in Berlin

The Leopoldina statement "Bioenergy: chances and limits", which was released at the end of July 2012, aroused interest across the country and triggered a renewed debate over the uses of bioenergy that continues today. On 12 September, Leopoldina sponsored a panel discussion at the Kaiserin Friedrich-Haus in Berlin for the purpose of providing a venue for different interest groups to exchange their views concerning the prospects and limitations of bioenergy.

At the beginning of the event, Prof. Rudolf Thauer ML, one of the coordinators of the Leopoldina statement, clarified why it was that after careful consideration the team of experts arrived at conclusions that were predominantly critical of the use of biomass energy. Dr Helmut Born, General Secretary of the German Farmers' Association „Bauernverband“, on the other hand, emphasised the fact that biomass accounts for a large percentage of primary energy production. Johannes Röring, who is a member of the German Bundestag represented the Committee on Food, Agriculture and Consumer Protection, followed up on that point by warning of the economic consequences of the current bioenergy debate. The head of the Bioenergy Systems Department at the Deutsches Biomasseforschungszentrum (Biomass Research Centre), Prof. Daniela Thrän, stressed the variety of bioenergy sources and characterised the limiting of the debate to energy crops as an unwarranted abridgement. Dr Georg Schütte, State Secretary for the Federal Ministry of Education and Research, thanked the Leopoldina for its statement and described it as an important contribution to the energy transition project. Christian Körner ML, Professor of Botany at the University of Basel and co-author of the statement, expressed the opinion that the whole approach to the topic of bioenergy has suffered from a degree of dewy-eyed optimism and that the label "green" propagates an illusion when applied to bioenergy.

Following a comprehensive analysis of the life cycles of biogas, bio-diesel and bio-ethanol, the members of the in-



Panel discussion in Berlin (from left): Coordinator of the Leopoldina statement Rudolf Thauer, Member of the German Bundestag Johannes Röring, State Secretary for the Federal Ministry of Education and Research Georg Schütte, Jule Reimer from the radio station Deutschlandfunk, who presented the discussion, Helmut Born, General Secretary of the German Farmers' Association, Daniela Thrän from the Biomass Research Centre and co-author of the Leopoldina study Christian Körner, University of Basel.

Photo: Peter Himself

ternational Leopoldina working group came to the conclusion that not all forms of bioenergy make a positive contribution to a climate-friendly energy supply in Germany. The goal of cutting down on the CO₂ emissions from fossil fuels by using biomass for energy production has, to a certain extent, clearly not been achieved. Because bioenergy not only requires more surface area than other renewable energy sources but is also a drain on groundwater resources through the intense farming of corn, the experts cannot recommend any further expansion of the bioenergy project. The use of biomass should, then, be restricted to energy recovery from waste materials.

The members of the German Bundestag have also shown an interest in the Leopoldina study "Bioenergy: chances and limits". At a hearing held by the Committee on Food, Agriculture and Consumer Protection on 7 November 2012, the questions from the members were primarily concerned with climate protection and the appropriate use of bioenergy. The discussion will continue. For example, both the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and the Federal

Ministry for Economic Cooperation and Development have invited the authors of the Leopoldina Statement to take part in hearings they have conducted. (ca, rg)

The Statement

Germany has seen a steady rise in the number of energy crops being cultivated for the production of biofuels and biogas. Because bioenergy is so versatile and easy to store, the German Federal Government wants to ensure that it continues to play a major role in the future. The Leopoldina's statement "Bioenergy – Chances and Limits" provides a comprehensive analysis of the use of bioenergy. It was compiled by a working group of more than 20 expert scientists and outlines under which conditions the utilization of bioenergy is appropriate.

▶ You can download the statement from www.leopoldina.org

International issues

Active aging benefits society

German-Japanese Symposium on Positive Aging in Tokyo / by Prof. Ursula M. Staudinger ML

Increasing life expectancies represent a potential for progress that has not yet been fully recognised and harnessed. Gains in life years offer considerable opportunities in terms of individual life concepts, the co-existence of generations, and the viability of societies. The Leopoldina was one of the co-organisers of a German-Japanese symposium that sought to compare Japan and Germany – two countries where people enjoy exceptionally long lives – in order to identify this potential and find ways of tapping into it.

At the symposium, distinguished scientists from Germany and Japan shed light on the latest findings and issues being investigated in research on aging. It was held on the joint initiative and at the invitation of the Leopoldina and the German Research and Innovation Forum Tokyo (DWIH), with the support of the University of Tokyo's Institute of Gerontology, the Science Council of Japan, the German Institute for Japanese Studies, the Japan Gerontological Society and the Japan NGO Council on Ageing (JANCA).

The symposium was attended by approximately 200 people, both from the scientific and business spheres and from civil society. It was designed to give researchers from Japan and Germany the chance to present and exchange their findings from research into aging. For the organisers, the event was a logical



Speakers, chairs and organisers of the symposium, Tokyo 2012.

Photo: Wakaba Noda

continuation of two previous initiatives: Firstly, representatives from the German Center for Neurodegenerative Diseases had met in Osaka in December 2011 at the invitation of the DWIH to discuss the topic “Aging and Neurodegeneration – A Challenge for Science and Society”, and secondly, members of the Leopoldina had met with representatives of the National Academy of Science and Engineering acatech the previous year during the STS forum in Kyoto to examine various issues relating to “aging and technology”, with a special focus on “ambient assisted living”.

In marked contrast to a view of aging focused on alleviating physical ailments and compensating for impairments, the title “Positive Aging” sought to emphasise that aging is a process affecting us all that has positive aspects of interest to both

research and society as a whole. This process has changed radically over the generations in the past 160 years or so. Rather than being characterised by infirmity and illness, aging now includes a phase in which people are – and want to be – more active and involved than past generations ever were at a comparable age. At the same time, shifting demographics, as we all know, mean that the elderly make up a larger percentage of the population than ever before – and one that is growing steadily. The participants at the symposium examined and debated the consequences of these changes from an economic point of view – both for national economies and businesses – and from sociological, psychological, and gerontological perspectives.

STS Forum in Kyoto – “Science and technology in society”

The Science and Technology (STS) Forum has been held on the first weekend in October every year since 2004. The Leopoldina is a member of STS, as are acatech, the German Research Foundation (DFG) and BASF. The German government also sends ministers or state secretaries as its representatives each year. At this year's event Prof. Ursula M. Staudinger ML, Vice President and Foreign Secretary of the Leopoldina, took part on its behalf.

The meeting has grown to become a global platform where researchers, politicians and representatives of business

and industry come together and discuss existing and anticipated developments in science and technology. The 2012 forum explored environmental change, energy, health, and aging research. Also on the agenda were structural issues such as the role that academies of science and humanities play in global society.

The representatives of the academies, who held a round-table meeting of their own, stressed the unique position that academies occupy in the research landscape. Whether they serve as working academies, as is the case in the Netherlands and Aus-

tria, or act in an advisory capacity, as in Germany, Japan and the US, they are in a position to set up interdisciplinary expert groups to carry out important research. There is scope, and indeed a need, for increasing the volume of expertise (which the academies produce for the public, for policymakers and for social change) being fed into the system via existing international bodies, including the United Nations. Participants also discussed how national systems within a global research landscape can learn from each other and work more closely together. (ums)

Sustainable energy for Africa

Participation in the German-South African Year of Science: A workshop on “Technological innovations for a low carbon society”, held in Pretoria

Carbon dioxide is regarded as one of the main causes of climate change. Newly industrialised countries like South Africa, Brazil and China are catching up with western industrialised countries in the amount of carbon they emit. With this in mind, the Leopoldina and the Academy of Science of South Africa (ASSAf) organised a workshop to explore how technological progress might help reduce carbon emissions in South Africa.

The workshop, entitled “Technological innovations for a low carbon society”, was held in Pretoria on 8 and 9 October 2012. It formed part of the German-South African Year of Science 2012/2013. Prof. Sigmar Wittig ML and Prof. Roseanne Diab of the ASSAf organised and led the event, which was attended by representatives of research, politics and society.

The workshop began with an analysis of how South Africa currently produces its energy. Coal is by far the most important energy source, followed by oil. Renewable energies and nuclear power play no significant role in the energy mix. It should come as no surprise that coal tops the list here – no other country on the continent is as rich in coal reserves as South Africa. As a result, it is a very cheap way of generating energy. The flip-side, however, is that burning the coal releases enormous amounts of carbon dioxide.

One way South Africa could reduce its dependency on coal is by increasing its use of renewable energies. These are obviously far more climate friendly than the fossil alternatives. Markus Bollmohr, head of the Energy, Climate and Environment section at the German embassy in Pretoria, gave a talk highlighting how South Africa could benefit from solar, hydro and wind power. Solar is a particularly promising approach, given the amount of sunlight the country has. Bollmohr also said that by providing initial funding for renewables projects, the South African government had taken a step in the right direction. Dr Tsakani Mthombeni from the Technical Innovation Agency added that basic research into renewables in



German-South African Cooperation: Zarina Moolla (ASSAf), Dr Christoph Richter, Prof. Jürgen Werner, Prof. Robert Pitz-Paal, Prof. Sigmar Wittig ML, Dr Takalani Rambau (ASSAf), Prof. Roseanne Diab (ASSAf) (from left).

Photo: Jan Nissen

South Africa is achieving good results. However, he also noted that it was having difficulties transferring the findings into market-ready products.

The Leopoldina delegation – Prof. Sigmar Wittig ML (Karlsruhe Institute of Technology), Prof. Wikus van Niekerk (Stellenbosch University), Prof. Jürgen Werner (University of Stuttgart), Prof. Robert Pitz-Paal (German Aerospace Center, DLR) and Dr Christoph Richter (DLR) – analysed the potential of solar power in South Africa. The group took account of the latest research findings and experiences gained in photovoltaics and solar thermal technologies such as concentrated solar power (CSP).

Their conclusion was that, to make it easier for local scientists to bring their findings to the market, South Africa’s industry should increase its efforts to use renewable energies in its operations. The experts also said that collaborating with international energy companies would make sense, as this would give South Africa access to new technologies (like CSP) and allow it to compete on the global market with its own products. Other presentations – some of which triggered heated debates – focused on topics such as the extent to which bioenergy can help reduce carbon emissions, and how South Africa

can capture and store greenhouse gases.

During the workshop it became clear that South Africa would face major challenges in increasing its use of renewable energies. Prof. Rosemary Falcon from the University of the Witwatersrand explained that South Africa depends so heavily on coal that it will continue to be the country’s main source of energy for a long time to come. Joanne Yawitch from the National Business Initiative pointed to social, political and economic factors that will make it difficult to move away from coal in the near future. Coal mining, she said, was responsible for thousands of jobs.

Sigmar Wittig was pleased with the lively exchange of ideas at the workshop and with the results it produced. He now believes that, although it will be hard to implement them under the current conditions, the technological solutions for reducing carbon emissions do exist in South Africa. His colleague Prof. Roseanne Diab praised the way the bilateral meeting was organised. Its strength, she said, was in the way that it brought experts from different disciplines and countries together to discuss a forward-looking topic. (jn)

Events

December

17 December

9.00 a.m.

LEOPOLDINA MEETING: "ERGEBNISSE DES LEOPOLDINA-FÖRDERPROGRAMMS VII"

Leopoldina, Auditorium, Jägerberg 1, 06108 Halle/Germany

18 December

4.30 p.m.

LEOPOLDINA CHRISTMAS LECTURE: "DIE EVOLUTION DER NATÜRLICHEN IMMUNITÄT - STUDIEN AN DROSOPHILA, VERGLEICH MIT WIRBELTIEREN" WITH THE NOBEL LAUREATE IN MEDICINE 2011 JULES A. HOFFMANN ML, STRASBOURG/FRANCE

Leopoldina, Auditorium, Jägerberg 1, 06108 Halle/Germany

19 December

7.00 p.m.

FISHBOWL DISCUSSION: "KOMMT DER BLACK-OUT? DIE ZUKUNFT DER ENERGIEVERSORGUNG IN MITTELDEUTSCHLAND"

Staatskanzlei Saxony-Anhalt, Banquet Room, Hegelstraße 42, 39104 Magdeburg/Germany; Registration required

2013

January

8 January

6.00 p.m.

SEMINAR ON THE HISTORY OF SCIENCE:

MICHAEL HAGNER ML, ZÜRICH: "GEGENWART UND ZUKUNFT DES WISSENSCHAFTLICHEN BUCHES"

Leopoldina, Auditorium, Jägerberg 1, 06108 Halle/Germany

19 January

PRECONFERENCE SYMPOSIUM TO THE 39TH ANNUAL CONFERENCE OF THE INTERNATIONAL EMBRYO TRANSFER SOCIETY: "ADVANCES IN TRANSGENIC ANIMAL PRODUCTION"

Hannover/Germany

► Scientific organization:
Heiner Niemann ML (Neustadt)

February

5 February

6.00 p.m.

SEMINAR ON THE HISTORY OF SCIENCE:

KARL-HEINZ LEVEN ML, ERLANGEN: "PATIENTEN IM PURPUR - BYZANTINISCHE KAISER UND IHRE ÄRZTE"

Leopoldina, Auditorium, Jägerberg 1, 06108 Halle/Germany

15 to 17 February

LEOPOLDINA DISCUSSION: "AUF DEM WEG ZUR PERFEKTEN RATIONALISIERUNG DER FORTPFLANZUNG?"

Leopoldina, Jägerberg 1, 06108 Halle/Germany

► Scientific organization: Peter Propping ML (Bonn) and Heinz Schott ML (Bonn)

March

5 March

6.00 p.m.

SEMINAR ON THE HISTORY OF SCIENCE:

VIOLA BALZ, DRESDEN:

"ZWISCHEN WIRKUNG UND ERFAHRUNG. EINE GESCHICHTE DER NEUROLEPTIKA IN DER BUNDESREPUBLIK DEUTSCHLAND, 1950-1980"

Leopoldina, Auditorium, Jägerberg 1, 06108 Halle/Germany

15 to 16 March

LEOPOLDINA SYMPOSIUM: "VISION AND DIABETES"

Berlin/Germany

► Scientific organization: Rudolf Guthoff ML (Rostock) und Peter Wiedemann ML (Leipzig)

April

9 April

6.00 p.m.

SEMINAR ON THE HISTORY OF SCIENCE:

KÄRIN NICKELSEN ML, MUNICH: "OTTO WARBURG, DIE QUANTEN UND DIE PHOTOSYNTHESE"

Leopoldina, Auditorium, Jägerberg 1, 06108 Halle/Germany

May

7 May

6.00 p.m.

SEMINAR ON THE HISTORY OF SCIENCE:

JÜRGEN STOLZENBERG, HALLE: "KANT UND DIE MEDIZIN"

Leopoldina, Auditorium, Jägerberg 1, 06108 Halle/Germany

June

4 June

6.00 p.m.

SEMINAR ON THE HISTORY OF SCIENCE:

PHILIP VAN DER EIJK, BERLIN: "DIE STELLUNG VON KRANKHEIT IN TELEOLOGISCHEN WELTANSCHAUUNGEN: PLATON, ARISTOTELES, GALEN"

Leopoldina, Auditorium, Jägerberg 1, 06108 Halle/Germany

July

2 July

6.00 p.m.

SEMINAR ON THE HISTORY OF SCIENCE:

SABINE ANAGNOSTOU, MARBURG: "MISSIONSPHARMAZIE: WISSENSAUSTAUSCH - WISSENSBILDUNG - WISSENSTRANSFER"

Leopoldina, Auditorium, Jägerberg 1, 06108 Halle/Germany

5 July

5.00 p.m.

LEOPOLDINA NIGHT: ON THE OCCASION OF THE 12TH LONG NIGHT OF SCIENCES IN HALLE

Leopoldina, Jägerberg 1, 06108 Halle/Germany

September

20 to 22 September

ANNUAL ASSEMBLY OF THE LEOPOLDINA: "MIND, BRAIN, GENOME, SOCIETY"

Leopoldina, Jägerberg 1, 06108 Halle/Germany

► Scientific organization:
Onur Güntürkün ML (Bochum)

People

Deceased members

Heinz Jagodzinski ML

20.4.1916 - 22.11.2012
Section Physics

Hans Kuhn ML

5.12.1919 - 25.11.2012 Troistorrent/
Switzerland
Section Chemistry

Yves Laporte ML

21.12.1920 - 15.5.2012 Paris/France
Section Neurosciences

Egbert Schmiedt ML

20.11.1920 - 11.12.2011
Section Surgery, Orthopaedics,
Anaesthesiology

Urs W. Schnyder ML

7.2.1923 - 21.10.2012 Zurich/Switzerland
Section Internal Medicine and
Dermatology

Friedrich Ernst Stieve ML

5.11.1915 - 7.9.2012 Munich/Germany
Section Radiology

Newly elected members, July 2012

Michael Böhm, Homburg/Germany,
Professor of Internal Medicine/Cardiology
and Director of the Clinic for Internal
Medicine III at Saarland University
Medical Center (Internal Medicine and
Dermatology Section)

Arndt Borkhardt, Düsseldorf/Ger-
many, Professor of Paediatric Oncology,
Haematology and Clinical Immunology,
and Director of the Clinic of Paediatric
Oncology, Haematology and Immuno-
logy at the Centre for Paediatric and
Adolescent Medicine, Heinrich Heine
University Düsseldorf (Gynaecology and
Paediatrics Section)

Ueli Braun, Zurich/Switzerland, Pro-
fessor of Inner Diseases of Ruminants
at the University of Zurich and Director
of the Department for Farm Animals

at the University of Zurich (Veterinary
Medicine Section)

Rena N. D'Souza, Dallas/USA, Pro-
fessor at the Department of Biomedical
Sciences, Texas A&M Health Science
Center, Baylor College of Dentistry,
Dallas (Ophthalmology, Otorhinolaryn-
gology and Stomatology Section)

Reinhard Georg Dummer, Zurich/
Switzerland, Professor of Dermatology
and Venereology at the Dermatology
Clinic at University Hospital Zurich
(Internal Medicine and Dermatology
Section)

Felix Eckstein, Salzburg/Austria,
Professor of Anatomy and Director of
the Institute of Anatomy and Musculo-
skeletal Research, Paracelsus Medical
University Salzburg (Anatomy and Anth-
ropology Section)

Peter Forster, Cambridge/UK, Fellow
at Murray Edwards College, University
of Cambridge (Pathology and Forensic
Medicine Section)

Bernd Gerber, Rostock/Germany,
Professor of Gynaecology and Obstetrics
and Director of the University Women's
Clinic at Klinikum Südstadt, University
of Rostock (Gynaecology and Paediatrics
Section)

Norbert Pfeiffer, Mainz/Germany,
Professor of Ophthalmology and Direc-
tor of the Ophthalmology Clinic at the
University of Mainz (Ophthalmology,
Otorhinolaryngology and Stomatology
Section)

Melitta Schachner, Hamburg/Ger-
many, Professor of Neurobiology at
the Center for Molecular Neurobiology
Hamburg (Neurosciences Section)

Peter Schirmacher, Heidelberg/Ger-
many, Professor of Pathology at Heidel-
berg University Hospital (Pathology and
Forensic Medicine Section)