LECTURES FOR THE GENERAL PUBLIC

PROMOTING THE SOCIAL AWARENESS OF SCIENCIFIC ACTIVITY

The increasing influence of scientific and technological advances on our attitudes, communication and lifestyle especially requires a matching offer of information by active scientists and communicators. In addition to leading research, the Foundation hosts a number of events promoting social awareness of science and the wider implications of scientific activity. This important task is expected to expand by the use of modern interactive techniques and online colloquia. ■

LECTURE

Twentieth Century's Scientific Legacy

NOVEMBER 22-23, 2000

Program committee
P. M. Echenique (Universidad del País Vasco / Euskal Herriko Unibertsitatea, Spain)
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47 and 38 years; these were the average life expectancies for men and women, respectively, in Europe in the year 1900, when 18% of newborns died before one year. Today, men die on average, at 73, women at 80, and the infant mortality rate is below 1% in developed countries. This is because, a century ago, having a burn or a deep cut, suffering appendicitis or giving birth to a child were enough to put the human being at the risk of death because of infections. If someone became ill or injured, the survival chances depended both on physic strength and luck. Nowadays, the risk of infection is not smaller but we have antibiotics to save our lives. We are so used to the benefits of science and its daughter technology that we think they have always been there.

Nevertheless, roughly one hundred years ago, neither the aspirin nor the antibiotics or the contraceptive pill existed —could you imagine a simple tooth extraction without anaesthesia?— any surgery involved high risk for the patient; there were no drinking water, drainage or utilities; everyone had to commute on foot or by animal traction transports to move from one place to another except the privileged living in cities where the railroad stopped; telephone, radio, TV and cinema did not exist; newspapers hardly arrived; eating fish and meat were luxuries that only a few could afford, and it was impossible to get fresh fish at any price far from the coast because it arrived in awful conditions due to the slowness of transport systems. Our standard of living has improved more in the last century than in the previous ten.

Such remarkable change, in such a short period of time, has happened due to the technological development associated to the advances in basic science since the end of the nineteenth century. However, young people do not always perceive the direct connection between science and welfare.

Our autonomous region's future mainly depends on the young people from where tomorrow's researchers and technologists will arise, and on their understanding of the contributions that science has done and has to do.

But science is much more than its practical applications. Essentially, it is a new intelectual

adventure, an essential part of modern culture that has changed our conception of the world and of ourselves in the last hundred years.

We have discovered that time and space emerged from a big explosion about 15 billion years ago, that ours is only a small planet in the outlying area of a big galaxy of hundreds of thousands of millions, that all living organisms on earth are related, that we come from the same molecule whose evolution has given rise to the biodiversity we know, that we have this molecule (DNA) in all of our cells like a living book of the evolution of earth, that matter is much more complex than the simple addition of atoms, that continents move... "we are" —as the late Carl Sagan stated— "the way in which cosmos knows itself", and science is our compass to come through the adventure of knowledge safely.

Secondary Education teachers play a key role in relaying correct information to new generations and the importance of looking for answers in the search of knowledge. For these teachers, to help them in their essential work, a series of conferences have been organized, under the general title of "Twentieth Century's Scientific Legacy". We hope that their hard job will benefit from it.

CONTRIBUTIONS

I. Oliveri (Former Minister of Education, Basque Government)
Opening remarks

G. Morata (Molecular Biology Center, C.S.I.C.)
The Gene

F. Plazaola (Universidad del País Vasco / Euskal Herriko Unibertsitatea)
The Atom and its Atomic Structure

P. M. Echenique (Universidad del País Vasco / Euskal Herriko Unibertsitatea)
Advances in Biology and Medicine

J. A. Garrido (Iberdrola)
Twentieth Century. The Triumph of Technology

F. Anguita (Universidad Complutense de Madrid)
Future in Space: Mars and Beyond

J. J. Iruin (Universidad del País Vasco / Euskal Herriko Unibertsitatea)
Twentieth Century Molecules

J. M. Sanz (Universidad de Valladolid)
Advances in Mathematics

A. Galindo (Universidad Complutense de Madrid)
Origin and End of the Universe

J. L. Arsuaga (Universidad Complutense de Madrid)
Men's Evolution and Future

F. Ares (Miramon Kutxaespacio de la Ciencia)
Computers and Miniaturization

PARTICIPANTS

92 Secondary Education teachers attended the conferences. Their names and respective schools are indicated below.

M. C. Arana, J. Ariceta, E. Rubio ..... Bidebieta BHI (San Sebastián)

M. N. García ..... I. B. Miguel de Unamuno (Bilbao)

I. Gárate ..... Motrico BHI (Motrico)

R. Cerrillo ..... San Alberto Magno (San Sebastián)

M. D. Echebeste ..... I. B. Aixerrota (Getxo)

D. Cohen ..... American School (Bilbao)

J. Ibarra ..... Beurko BHI (Baracaldo)

A. Juaristi ..... Koldo Mitxelena BHI (Renteria)

M. Arregi, A. Gardoki ..... T. Aranzadi Ikastola (Vergara)

M. Folch, M. A. García de la Yedra ..... Inst. Politecn. Easo (San Sebastián)

I. Lakunza, A. Mondragón ..... Laskorain Ikastola (Tolosa)

A. Echarri ..... CEIDA-DONOSTIA (San Sebastián)

C. Badiola, M.G. Iriarte ..... JMª Iparraguirre BHI (Urretxu)

M. Imaz, M. Usatorre ..... Zuazola-Larraña BHI (Oñate)

M. Pascual ..... IES Leizarán BHI (Andoain)

E. Arana ..... IB Alza (San Sebastián)

J. Sarasola ..... Txorierri B.H.I. (Derio)

I. Korkostegi ..... IB Arrasate (Arrasate)

A. M. Iturrioz ..... Beurko BHI (Baracaldo)

I. Zeberio ..... Gabriel Aresti BI (Getxo)

C. Pérez ..... Aixerrota BHI (Getxo)

M. Antxia, I. Kerxeta ..... FJ Zumarraga BI (Durango)

A. M. Ayesta ..... Andra Mari Institutoa (Galdacano)

A. M. Ruiz ..... Arratiako Instituoa (Arrigorriaga)

A. Uriz ..... Elgoibar BHI (Elgoibar)

M.R. Alberdi, R.M. Fernández, S. Gaecía, M. T. González,
M. Los Santos, M. A. Maculet, J. M. Pineda, J. Valiente ..... IES Usandizaga (San Sebastián)

I. Gutierrez, J. C. Lizarazu ..... La Anunciata (San Sebastián)

M. A. Fernández ..... Aixerrota BI (Getxo)

M.T. Santos ..... COP (Rentería)

A. Albisu, P. Aseginolaza, M. Badiola,
J.J. Huerta, A.I. Villaluenga ..... Txindoki Alkartasuna BI (Beasain)

T. Arano, M. Eceiza ..... Orixe BHI (Tolosa)

C. Ahechu, A. Dompedro,
M. J. Ruiz de Ocenda, G. Sánchez ..... Koldo Mitxelena IB (Rentería)

F. Fouz ..... COP Donostia (San Sebastián)

J. Etxeberria, A. Vélez ..... San Benito Ikastola (Lazkano)

M. Pérez ..... IBD-UBI (San Sebastián)

R. Azcona ..... Talaia BHI (Hondarribia)

J. Gallego ..... Oianguren BHI (Ordizia)

J. Juni ..... Koldo Mitxelena BHI (San Sebastián)

A. Lekunberri ..... IES Aniturri BHI (Agurain)

T. Imaz ..... Agustin Iturriaga-Labaka IB (Hernani)

J.A. Andrés ..... Antigua BHI (San Sebastián)

M. Mart'nez ..... IES Lasarte-Usurbil BHI (Lasarte)

M. Lizeaga ..... Antigua BHI (San Sebastián)

P. Legorburu ..... Iurreta BHI (Iurreta)

M.M. Celarain ..... Txindoki-Alkartasua Institutua (Beasain)

J.M. Lopez ..... Oianguren Institutoa (Ordizia)

M. P. Martinez de Eulate ..... IES Usandizaga (San Sebastián)

M. D. Badiola ..... Bidebieta BHI (San Sebastián)

M. Irizar ..... I.B. Tailaia (Hondarribia)

I. Zapirain ..... I.B. Lezo (Lezo)

E. Bañales ..... El Regato (Portugalete)

A. Gil ..... COP Vitoria (Vitoria)

J. A. Apiñaniz ..... I.E.S. Francisco de Vitoria B.H.I (Vitoria)

LECTURE

Climate Change

OCTOBER 25-26, 2001

Organizers
Donostia International Physics Center
Ilustre Colegio Oficial de Físicos Bilbao, Madrid

Collaborators
Aquarium Donostia-San Sebastián

Earth's atmosphere is exposed to continuous change. Cyclically its temperature and composition vary to obtain a continuous self-regulation. Climate is a complex system. Atmospheric behavior may be altered by volcanic eruptions, oceans, polar icecaps or by the biosphere. Lately, there have been rapid changes which force us to think climate changes are a consequence of human activity. We live in a society in which industrial activities, combustion of fossil fuels, and car and airplane engines release large quantities of gases into the atmosphere obstructing the remains of solar radiation returning to space. This is the "greenhouse effect".

The increase of gas emissions like (CH4) Methane, (CO2) Carbon Dioxide, together with (SO2) Sulphur Dioxide, (N2O) Nitrous Oxide and Halo carbides (CFF1 and CFC 12) create global warming and an elevation in the level of the sea.

Assuming this is so, ice masses of the polar icecaps could melt. The level of the oceans will increase and therefore coastal areas and deltas would be flooded. Many animal species will be displaced from their natural habitats. The number of tropical illnesses will increase and move toward more temperate areas. According to Hadley Center, Spain will be one of the countries that will suffer these consequences. The Mediterranean beaches, in the Saler (Valencia) and the Cantabrian coastline are in danger of extinction.

In this 1st Workshop on Climate Change the invited experts create awareness of the problems brought on by climate change.

CONTRIBUTIONS

L. Balairón (Instituto Nacional de Meteorología, Spain)
The scientific basis of climactic change and greenhouse gases emissions scenarios on XXI Century

D. Viner (University of East Anglia, United Kingdom)
The construction and application of climate change data for impacts and policy assessments: communicating uncertainty

E. Zorita (Institut für Kuestenforschung, Germany)
The Ocean-Atmosphere interaction

Millán (Centro de estudios ambientales del mediterráneo, Spain)
Climactic Change scenarios: Rain impacts in South Europe

C. Rodríguez (Universidad de Salamanca, Spain)
The climate variability: Thermic impact of climactic change in the Basque Country

A. Iglesias (Universidad politécnica de Madrid, Spain)
Impacts on agriculture

J. Nieto (Confederación de Medio Ambiente y Salud Labora, Spainl)
Social impacts of climactic change

J. Rekondo (*El Correo*, Spain)
International and European response to Kioto effects
Debate: Society, Media and Climactic Changes
Moderator: *G. Echagüe* (Ilustre Colegio Oficial de Físicos, Spain)
Participants: *L. Balairón, A. Iglesias, M. Millán, J. Nieto, J. Rekondo, C. Rodríguez, E. Zorita*

PARTICIPANTS

There were 86 participants that came from diverse disciplines:

- 25 university teachers and teachers of Highest Formative Cycles
- 35 university students from science faculties and Environment Health cycles
- Researchers
- Fellows
- Technicians from the Basque Government
- Experts in environmental areas
- Experts from the Harbour Authorities of Pasajes, Spain