

The Institute of Physics

History of Physics Group

Chairman: Professor A J Meadows CPhys FInstP

NEWSLETTER

No. 1

March 1987

DISCORSI
E
DIMOSTRAZIONI
MATEMATICHE,
intorno à due nuoue scienze

Attenenti alla

MECANICA & i MOVIMENTI LOCALI;

del Signor

GALILEO GALILEI LINCEO,

Filosofo e Matematico primario del Serenissimo
Grand Duca di Toscana.

Con una Appendice del centro di gravità d'alcuni Solidi.



IN LEIDA.

Appresso gli Elsevirii. M. D. C. XXXVIII.

The title page of Galileo's Mathematical Discourses and Demonstrations concerning Two New Sciences (Leiden 1638).

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Forthcoming Events.

8th. April 1987. London. THE ELECTRON & SEA POWER. Lecture by Vice-Admiral Sir Arthur Hezlet. Details from Institution of Electrical Engineers, Savoy Place, London WC2 0BL.
16th. May 1987. London. SCIENTIFIC BIOGRAPHY. Details from Sophie Forgan, Dept. of Design, Teeside Polytechnic, Middlesborough, Cleveland TS1 3BA.

27th. May 1987. Napier College, Edinburgh. **Group Meeting on the Social Relations of Physics.** Details from Dr. Roche.

10th. to 13th. July 1987. Dublin. Institution of Electrical Engineers HISTORY OF TECHNOLOGY GROUP WEEKEND. Details from I.E.E. as above. (Reference : LS(SG)).

19th. to 21st. July 1987. London. ROBERT HOOKE CONFERENCE.

Registration by 1st. April to B.S.H.S. (Address page 8.)

22nd. to 24th. July 1987. Bristol, England.

INTERNATIONAL CONFERENCE TO CELEBRATE THE 40TH. ANNIVERSARY OF THE DISCOVERY OF THE PI MESON. Details from Dr. B. Poster, Wills Laboratory, Royal Fort, Tyndall Avenue, Bristol BS8 1TL, U.K.

See page 7 for an outline of proposed Group meetings.

Notes for contributors.

The Newsletter is edited by David Hooper, 36, Flag Lane North, Upton Heath, Chester CH2 1LE. His telephone number is Chester (0244) 380844. The copy date for the next Newsletter is 8th. May 1987 but earlier contributions would be welcomed. For the time being, it has been decided not to include book reviews, research papers and advertisements except in very exceptional cases. However organisers of relevant meetings or conferences are invited to send details to the Editor for possible publication.

Editorial.

A new periodical, even such a modest one as this, has the potential, supposing that it fills a real need, to become influential in its field. This brief Newsletter is perhaps like one of many apple pips which might just grow into a tree of Newtonian grandeur, but might equally decay almost without trace in a few years' time. However the present vitality of the Group and the Institute gives grounds for optimism. Who can tell?

It is intended that the Newsletter shall appear twice a year for the next year or two at least and it will attempt to keep members of the History of Physics Group in touch with each other and like minded societies. We cannot, and do not intend to, compete with the excellent Newsletter produced by the British Society for the History of Science. Unlike it we shall concentrate on the history of physics and very closely related disciplines. Those familiar with the BSHS Newsletter will be aware of our sincere form of flattery. I imagine that our chief merit compared with the other Newsletter will be our brevity!

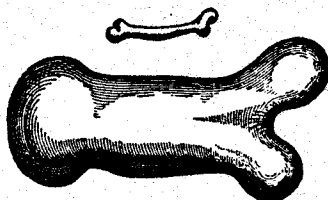
The History of Physics for the Physicist.

Report on the Group's Summer Conference at Oxford, 2nd. to 4th. July 1986.

FIRST DAY.

After registration at Linacre College and a guided tour of Oxford by early arrivals, Professor Meadows, Group Chairman welcomed participants and introduced the afternoon proceedings. Dr. D.T. Whiteside, talking mainly on Newtonian mathematics, got the conference off to a good start, with a provocative and yet abstruse paper. He was followed by speakers on 20th. Century historical physics : Professor M. Gowling on "Writing on Atomic Energy Physics" and Dr. David DeVorkin, of the Air and Space Museum in Washington, stressing the importance of oral history. The afternoon session ended with a most thoughtful paper by Dr. Krige of CERN pointing out the difficult choices which have to be made in writing history, particularly when there is too much material.

In the early evening, many participants were glad to visit or revisit the History of Science Museum in Oxford for a reception and a special exhibition of electrical measuring apparatus, kindly arranged by Dr. W. Hackmann.



SECOND DAY.

Speaking, so he said, as an "amateur historian of science", Professor N. Kurti stressed that human frailty is an important factor in the history of physics. With skill and humour, he sketched in some of the background surrounding an application for membership of the Académie des Sciences and Helmholtz's "rejection" by the University of Oxford. He gave cautionary tales of "unconscious plagiarism" and concluded with a reminder that over attention to the past can sometimes hinder originality.

In the next lecture, Dr. J. Roche traced the term "vector potential" from its first use by Maxwell, in a letter to Tait in 1871, until the present. His account brought out different conceptions favoured in Britain and in continental Europe and made the distinction between the rôles of physical ideas and auxiliary mathematics in the development of theory.

The History of Physics for the Physicist. Continued.

Dr. Roche was followed by Dr. F.R. Stephenson on "The use of Historical Observations in Modern Astronomy". Using examples ranging from Babylon and China to Europe, Dr. Stephenson's well illustrated lecture gave examples of applications to such matters as long term lengthening of the day, the orbit of Halley's comet and rare near phenomena such as supernovae. Dr. Stephenson concluded by discussing the reliability of the historical record.

Dr. W. Hackmann gave the last paper of the morning on measuring devices in electricity. Starting with Coulomb's rudimentary but effective torsion balance of 1785, Dr. Hackman's beautifully illustrated account traced the development of electrical measuring apparatus, finishing with Kelvin's precision instruments of the 1860s. He drew attention to the impetus given to electrostatic devices by the need to measure the output of electrostatic generators and by investigations into atmospheric electricity.

After lunch, we heard Dr. C. Sheppard give an illustrated history of the scanning optical microscope, placing it in the context of microscopy as a whole, both optical and electronic. He then concentrated on the laser era, dating this from a suggestion in 1974 that lasers can contribute to the design of microscopes.

Dr. P. Hoch's paper was entitled "The Rise of Physics Laboratories in the Electrical Industry: America v. Britain". He attributed the origin of industrial laboratories to commercial and military needs. Britain's failure relative to the United States was then examined with regard to both symptoms and causes.

In passing, Dr. Hoch raised the interesting question of the "congealing" of a scientific field, using the example of solid state physics.

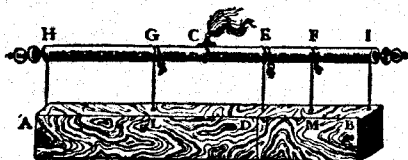
The second part of the afternoon was devoted to papers on the use of archives, museums and libraries for historical research.

Dr. S. Weart's lecture on the American Institute of Physics Center for the History of Physics packed a vast amount of useful information into a short time. He conveyed a vivid impression of the twin roles of his Center: the preservation of archive material and the making available of this to potential users, both specialist and non-specialist.



The History of Physics for the Physicist. Continued.

Dr. J. Bennett of the Whipple Museum, Cambridge, in an attractively illustrated lecture, took us through a range of museum hardware to each of which he applied the critical question: "Is this a scientific instrument?" In due course, we arrived, without any qualifications, at one which was: A Huggins spectroscope for use with an astronomical telescope! Dr. Bennett conveyed convincingly, his image of a science museum as "a dramatic and compelling record of the subject".



THIRD DAY.

The role of history in physics education was explored in the final morning session of the conference, which was chaired by Dr. S. Weart of the American Institute of Physics. Dr. D.F. Shaw of the Radcliffe Science Library, Oxford gave a very comprehensive guide to important collections of physics literature while Mr. D.J. Bryden described the sources available for the history of science and technology at the Science Museum Library, London.

Following these excellent literature surveys, Professor A.P. French gave interesting historical anecdotes as good and bad examples of the uses of history in teaching physics. Mr. S. Leadstone of Atlantic College, South Glamorgan, Wales, using textbook discussions of the photoelectric effect as instances, spoke on the difficulties experienced by teachers in clarifying concepts to their students.

Finally, Mr. B. Davies of the Institute of Physics gave illustrative examples of the kinds of historical material which can be incorporated in teaching projects. In this vein, a recording of J.J. Thomson speaking was much enjoyed by his audience.

All those responsible, particularly Ann Geneva, Michael Roche, and John Roche, who worked so hard and efficiently, are to be congratulated on efficient organisation and a most interesting summer school.

From notes by Raj Williamson, Stuart Leadstone and David Hooper.

Illustrations.

The illustrations in this Newsletter are taken from Galileo's Two New Sciences in the Dover Publications reprint of the 1914 translation by Henry Crew and Alfonso de Saivio.

Conference Photograph.

Copies of the photograph taken at the Conference on the History of Physics for the Physicist, Linacre College Garden, Oxford, on 3rd. July 1986, are still available via John Roche, price three pounds. Those included are :
Left to Right.

Seated :

Laurinda Leite, Roser Valenti, John Roche, Elizabeth Simmons, Nicholas Kurti, Raj Williamson, John Heilbron, Margreta Bond-Fahlberg, Anthony French, Bridget Adams, John Ziman, David DeVorkin, Christine Sutton.

Standing :

Olle Edqvist, Paul Hoch, Spencer Weart, Donal Flavin, Andrew Bedford, Brian Davies, Andrew Whitaker, John Krige, José Sanchez-Ron, David Hooper, Bernard Spurgin, Erik Noreland, Enrique Gaztanaga, Michael Roche, Aijaz Ahmad, A.J.Meadows, Anonymous, Stephen Veazey, John Redding.

Back Row :

Friedrich Steinle, Keld Nielson, E.G. Thomas, Colin Sheppard, Robin Preston, George Goudaroulis, Kostas Gavroglu, John Simmons, Donald Okpalugo, Willem Hackmann, Hugh Montgomery, Stuart Leadstone, Jim Bennett, F.R. Stephenson, Dennis Shaw.

Please inform the Newsletter Editor, if there are any major errors, for which he apologises in advance. A number of participants were unable to attend this photographic event.

Annual General Meeting Report.

The first Annual General Meeting of the History of Physics Group of the Institute of Physics was held in Linacre College, Oxford at 1845 h on Thursday 3 July 1986. The meeting was chaired by Professor A.J. Meadows and the Annual Report and Agenda had been circulated in advance. Professor Meadows summarised and commented on the present and future activities of the Group and encouraged more members to attend meetings. Mr. Brian Davies from Institute Headquarters congratulated the Group on behalf of the Institute for its successful activities to date and suggested further projects.

The proposed Constitution was discussed in great detail and it was adopted, subject to certain amendments. It will now be submitted to Council for ratification.

Continued.

Annual General Meeting Report.

Continued.

The following Steering Committee members were proposed for election and were unanimously elected by the A.G.M. :

Chairman : Professor A.J. Meadows, CPhys, FInstP.
Secretary : Dr. J. J. Roche, CPhys, MInstP.
Committee Members : Mr. B. Gee, CPhys, MInstP.
Mr. D.W.G. Hooper, CPhys, MInstP.
Professor N. Kurti, CPhys, FInstP.
Mr. G.S. Leadstone, CPhys, MInstP.
Mrs. R. Williamson, CPhys, MInstP.

Mr. B. Davies, CPhys, FInstP was co-opted to the Committee.

John Roche.

Committee Meeting.

The first meeting of the new Committee was held at 0945 h on 12th. November in Cardiff. Mr. Bernard Spurgin, CPhys, MInstP was co-opted to the Committee.

The following meetings of the Group were proposed :

August 1987 : Conference on History of Physics in the Sixth Form.
November 1987 : The Role of Mathematics in the History of Physics.

John Roche.

Welsh Regional Meeting.

The Group's second regional meeting was held in University College, Cardiff on 12th. November 1986. An audience, modest in numbers but strong in enthusiasm, heard six fine contributions from the invited speakers on a wide range of topics. Professors Emeritus Sir Granville Benyon and Frank Llewellyn-Jones gave lively accounts of their branches of physics with which they had been concerned for much of their working lives, namely ionspheric and ionization physics respectively. First-hand accounts of Appleton and Townsend added a personal dimension, both interesting and entertaining. The morning session concluded with an articulate and informative account by Professor Brian Josephson of the circumstances surrounding his Nobel prizewinning work on supercurrents. In the afternoon wider aspects of physics were presented in three well prepared and stimulating papers. Mr. G.M. Owen of the University Hospital of Wales gave a richly illustrated talk on historical aspects of medical physics from Rontgen to the modern use of radionuclides.

Dr. David Allsobrook of the Education Department examined the interaction between the rural and industrial economies in Wales. His thoughtful talk led nicely into the final contribution of the day from Dr. Stuart Owen-Jones of the Welsh Industrial and Maritime Museum, whose well-illustrated presentation on industrial development in South Wales ended the day. Continued.

Welsh Regional Meeting.

Continued.

Altogether this was an occasion which gave stimulation and enjoyment to those who attended. It was a pity that the response in terms of numbers was rather poor, not only from the academic fraternity in Wales but, surprisingly, from members of the History of Physics Group itself.

Stuart Leadstone.

Museums Meeting.

On November 29th. 1986, the Science Museum, in South Kensington, was the venue for a joint meeting of the British Society for the History of Science and the Group for Scientific, Technological and Medical Collections.

Points highlighted during the talks and discussions included the respective demands, sometimes conflicting, of curators and historians of science and also the difficulties facing curators in the presentation of their material. Members of the History of Physics Group may know that the Greater Manchester Museum of Science and Industry has put together a Joule collection. Arrangements for viewing this may be made by contacting Dr. Stella Butler on 061-832-2244.

News of other Societies.

The Group for Scientific, Technical and Medical Collections is particularly intended for those concerned in the preservation and study of historic artifacts, but those wishing to receive literature may join as Associate Members. Details from the Treasurer G.S.T.M.C., Industrial Museum, Princes Wharf, Bristol BS2 2RN. (Source : BSHS Newsletter. May 1986.)

The Executive Secretary of the British Society for the History of Science is Wg. Cdr. G. Bennett at 31, High St., Stanford-in-the Vale, Faringdon, Oxon. SN7 8LH.

Disclaimer.

The IOP Historical Group Newsletter expresses the views of the Editor or of named contributors, and not necessarily those of the Group nor the Institute of Physics as a whole. While every effort is made to ensure accuracy, information must be checked before use is made of it which would involve financial or other loss. The Editor would like to be told of any inaccuracies as soon as they are noted please.

Help Please!

We need a short title for the Newsletter and I would welcome suggestions. We surely cannot call our publication The Institute of Physics History of Physics Group Newsletter for much longer. The only suggestion I have so far is Discourses. Please let me have your comments or ideas!

David Hooper.