

# NEWSLETTER

**girep**

Groupe International de recherche sur l'enseignement de la physique  
International research group on physics teaching  
Internationaler Arbeitskreis zur Förderung des Physikunterrichts

N. 20 - July 1988

This issue of the Newsletter brings you the First Announcement of the GIREP 89 Conference, to be held in Hungary in September 1989.

Members who have updated their fee at least until 1987 will also be receiving the revised edition of the GIREP Network with this issue of the Newsletter. The Network contains information about past publications and current interests of the members of GIREP, as given by themselves when they filled up their Interest Sheets. The Network includes persons who:

- \* have filled up at some time the GIREP Interest Sheet
- \* have paid the fee at least until 1986
- \* or are included in the Newsletter mailing list under a special agreement aimed to help people who live in third-world countries to keep in touch with GIREP in spite of their difficulties in keeping the fee updated regularly.

So if you are not receiving the Network with your Newsletter please check your yearfee printed in the upper right corner of the label.

If you are receiving the Network but your name is not included, please make sure that you returned the Interest Sheet when it was sent to you.

For any further enquiry, please contact the GIREP Secretary.

## 1. GIREP CONFERENCE 1989 - FIRST ANNOUNCEMENT

The 1989 GIREP Conference will take place in Hungary, at the Lake Balaton from 7 to 13 September 1989, with the sponsorship of UNESCO.

The topic of the Conference will be:

### ENERGY ALTERNATIVES

The benefits and risks of modern technology, the concept of acceptable risk are in the focus of public interest. The goal of the Conference will be to discuss how to educate the incoming generations to realistic risk assessment and rational decision making, using the energy alternatives (especially nuclear power) as case studies.

The Conference will include expert plenary talks, didactical presentations, discussion groups, activating workshops, educational exhibitions, study trips and sightseeing tours, in the spirit of the GIREP '81 Conference on Nuclear Structure - Nuclear Power (held also in Hungary), but taking into account the changes brought by in the eighties.

The Conference will be held at the Educational Center of the Trade Unions on the lakeside, at Balatonfüred. This is a historic and scenic resort town, the center of a wine producing region. It can be reached by train or by car from Budapest (130 km), by car from Vienna (260 km) or by train from Venezia. Participants may plan arrival on Sunday via Budapest airport.

The planned participation cost is about 500 DM, including 7 nights, breakfast, lunch, conference dinner, reception, excursion, proceedings.

The expected number of participants is about 200. If you intend to participate, please write to the Organizing Committee about your intention before 31 December 1988. If you plan to contribute to the Conference, please indicate your topics and experience.

#### International Advisory Committee:

Prof. Paul Black, President of GIREP, University of London  
Prof. Joseph Depireux, President of the Advisory Committee of Physics Education of the European Physical Society  
Prof. Leonard Jossem, President of the Int'l Commission for Physics Education of IUPAP  
Prof. Alexandra Kornhauser, Int'l Center for Chemistry, Univ. of Ljubljana  
Prof. Laxman Kothari, University of Dehli  
Dr. Helmut Mikelskis, IPN, University of Kiel  
Prof. Jan Nilsson, Secretary General of IUPAP, Univ. of Goteborg  
Dr. Alfred Pflug, University of Vienna  
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Prof. Sakae Shimizu, University of Kyoto  
Prof. Joan Solomon, University of Oxford  
Prof. Eugene P. Wigner, University of Princeton  
Prof. Jack Wilson, Secretary of AAPT, Univ. of Maryland

#### Local Organizing Committee

Prof. Julius Csikai, Kossuth Lajos University  
Ferenc Genzwein, National Center for Educational Technology  
Prof. George Marx, Roland Eotvos University  
Prof. Zoltan Szatmary, Central Research Institute for Physics, Hungarian Academy  
Prof. Paul Tetenyi, National Atomic Energy Commission  
Secretaries: Dr, Esther Toth, Suzanne Szabo

The address of the Organizing Committee is:  
ENERGY, Dept. of Atomic Physics, Eotvos University  
Puskin utca 5-7, BUDAPEST H-1088 (Hungary)  
Phone 36-1-187902  
Telex 22-5459 atomfh  
Bitnet A8231DAHataWIUNI11

## 2. PROCEEDINGS OF THE ICPE CONFERENCE ON "TEACHING MODERN PHYSICS - CONDENSED MATTER"

At the moment of writing this Newsletter there still is a great deal of uncertainty on the size (300 to 500 pages) and the cost of the book.

GIREP is considering the possibility of mailing the Proceedings of the Munchen Conference, in their complete form or in an abridged education-oriented version according to cost, to members as a bonus for 1988 membership. But the Treasurer foresees the necessity of asking the recipients to pay for the mailing expenses which, owing to the weight of the publication, are expected to be too high for the GIREP budget.

In order to minimise bank and other charges for all concerned, we will make a note of and inform you of the sterling equivalent of the postage costs at the time we send you the material: then when you will pay your 1989 membership fee you can add the amount owed. (The cheapest form of mailing will be chosen unless otherwise requested).

Therefore members who wish to receive the Proceedings should please write to the Secretary stating their willingness to pay for the postage. Please note that the Proceedings will be printed in a limited number of copies, according to request. So if you are interested in receiving the book do not forget to require it! Your request will be processed only if received before the end of October 1988.

## 3. REPORTS ON INTERNATIONAL EVENTS

The 4th ICASE European Seminar on EMPIRICAL RESEARCH IN SCIENCE AND MATHEMATICS EDUCATION, Univ. of Dortmund, FRG, 25-27 May 1988 (contributed by Prof. Vittorio Zanetti, Univ. of Trento, Italy)

This Seminar was organised with the sponsorship of ICASE, the University of Dortmund, the Arbeitskreis von Nordrhein-Westfalen and the financial support of the British Council, the German UNESCO Commission and the Stadtparkasse of Dortmund.

The attendance was of some 50 persons, partly researchers, partly University teachers.

The number of invited talks summed up to 13, on the following topics:

- M. Shayer, King's College, London: "The unity of formal operations."
- Same speaker: "Can cognitive acceleration be produced, and can it be measured?"
- L. Lybeck, Dept. of Education and Educational Research, Goteborg Univ.: "A research approach to science and mathematics education at Goteborg: some methodological issues in studies of students' and educators' conceptions of some strategically chosen concepts."
- H. Bauer, Padagogische Hochschule Kiel: "The significance of molecular and crystal structure to chemistry and chemical education."
- M. Seddon, Univ. of West Anglia in Norwich: "The significance of significance tests in statistically based research."

- W. Jochems and G. Lameris, Delft Univ. of Technology: "Is course reform effective?"
- H. Stromdahl, A. Tullberg and L. Lybeck, Dept. of Education and Educational Research, Univ. of Goteborg: "Chemistry educators' conceptions on how to teach 'the mole'."
- Same speakers: "Chemistry educators' conceptions of 1 mole."
- G. Merzyn, Univ. of Gottingen: "Physics textbooks and physics teachers."
- C. von Rhoneck, Padagogische Hochschule Ludwigsburg: "Psychological aspects of learning about basic electricity."
- B. Lowe, Padagogische Hochschule Heidelberg: "Structure and age-development of pupils' interests in biology and their dependence on some specific variables."
- D. Whitelock, Institute of Education, Univ. of London: "Repertory grid elicitation: a potential tool for studying secondary school pupils' ideas in dynamics?"
- G. Malle, Institut fur Mathematik, Univ. of Klagenfurt: "Task-based interviews in elementary algebra."

The very high degree of interest existing among the participants is demonstrated by the fact that each presentation was followed by a discussion in which almost everyone took part. It never happened that we finished before the end of the allotted 30 minutes and, indeed, in order to keep the schedule the chairpersons were frequently forced to cut the discussions short.

The Proceedings of the Conference will be published directly by ICASE. I cannot finish this report without remembering the commitment and competence in organising this international event of Prof. Dr. H-J Schmidt and of his kind wife Ursula.

#### 4. BOOKS AND JOURNALS

G. Radnai, R. Kunfalvi - Physics in Budapest, a Survey (84 pages) published by North-Holland Physics Publishing, P.O.Box 103, 1000 AC Amsterdam, The Netherlands.

This interesting little book was originally meant as a present to the participants to the 8th General Conference of the Condensed Matter Division of the European Physical Society, held in Budapest on 6-9 April 1988. As such, it has no price attached. But the publisher seems to have about one thousand copies still in store and may be willing to sell the book on direct request at a hopefully low price.

Radnai and Kunfalvi's survey begins with Regiomontanus and Kepler and ends with the works of the living outstanding hungarian physicists of today, putting the scientific activities of so many scientists into the perspective of Hungary's history.

The unknowing reader is stunned by the astonishing number of outstanding scientists such a small country has given to humanity. Many well-known Nobel Prize winners, for example, were born and raised in Hungary, although their research may have taken place in other countries through emigration.

The book is well illustrated, many of the photographs coming from R. Kunfalvi's personal collection.

Colin Siddons - Experiments in Physics (170 pages), published by Basil Blackwell Ltd., P.O.Box 87, Oxford, UK price Lst. 8.95

A useful, very well-written and entertaining collection of school experiments by a well known British physics school-teacher. The topics range from liquids and gases to dynamics, from optics to electricity and magnetism, from electromagnetism to heat and to the repetition of the historical experiments of Newton and Faraday. Although the materials for many of the experiments are of easy and cheap retrieval and many of the experiments are also suitable to young children, the physics that underlies them is never trivial. The author carefully highlights the physics concepts involved and explores or suggests the possible didactical extensions, often recalling his own teaching and/or learning experiences in a humorous style.

S.T.A.I.R. - Science & Technology Abstracts & Information Resources. Editor: David Browning. Published by J W Arrowsmith Ltd, Winterstoke Road, Bristol BS3 2NT, UK.

This journal is published three to four times a year. Subscriptions for 1988 are Lst. 17.50 per annum. The first issue is available on a free trial basis from the publisher. The journal intends to collect the information required to meet the demands on teachers and pupils who wish to investigate new areas of knowledge and new ideas in the pursuit of a problem-solving approach having social and industrial relevance. An experienced team of abstractors peruses over 150 journals and abstracts papers and articles which are directly related to secondary and further education. Increasingly, abstracts on primary education will be included when relevant. It is also intended to produce abstracts and resource items on project work and on problem-solving as a major part of the output of the journal, as a springboard for ideas in these areas. In addition, abstracts which are suitable as a base for practical or project work will be designated and indexed for easy reference.

## 5. FORTHCOMING CONFERENCES

1) International Astronomical Union Colloquium on the Teaching of Astronomy: Past and Future Williamstown, Massachusetts, USA - 27-30 July, 1988

Program The program includes all aspects of the teaching of astronomy to the public and to science and non-science students in schools, universities and other institutions, in all parts of the world, using both traditional and alternative approaches and technologies.

Proceedings are to be published by Cambridge University Press.

Contact: J.R. Percy, Dept. of Astronomy, Univ. of Toronto, Toronto, Ontario, Canada M5S 1A1.

2) Conference on Computers in Physics Instruction North Carolina State University - 1-5 August 1988

Contact: John S. Risley, Dept. of Physics, North Carolina State Univ., Raleigh, NC 27695-B202, USA

3) ATEE Conference, Barcelona (Spain), September 1988

The Group Activities of the Conference will be dedicated to a theme called "Learning problems and Teaching Strategies in Science Education". A small pre-congress symposium might also be organized. Possible research questions are:

\* Which preconceptions/misconceptions on science subjects are manifest in pupils?

\* Which teaching strategies can be used that take into account preconceptions/misconceptions of pupils?

\* Which preconceptions/misconceptions on science subjects are manifest in student-teachers?

\* Which teaching strategies can be used to take into account preconceptions/misconceptions of student-teachers?

\* Which skills and attitudes are manifest in student-teachers on the subject of bridging the gap between the conceptions of pupils and the conceptions of the discipline?

\* How to make use of such skills and attitudes in teacher training?

A preliminary meeting to be held in February or March at the free University of Amsterdam will deal with:

\* Investigation of common research goals in different countries

\* Extrapolation of future possibilities for cooperation in common fields of interest

\* Planning of some common research in different countries, the preliminary results of which should be reported in the Barcelona Conference.

Contacts: Dr. F. G. Brinkman, Dept of Educational Research, Hogeschool Holland, Postbus 261, 1110 AG Diemen, The Netherlands. Prof. J. Depireux, Institut de Physique B-5, B-4000 Sart-Tilman, Liege 1, Belgium, telex UNIVLG 41397

4) ICASE Europe Research Seminar on: "Evaluation of Teaching Effectiveness"

This Seminar will be hosted by the Annual Meeting of A.I.F. (Association of Italian Physics Teachers) that will be held in Caserta (Italy) from 26 to 29 October 1988.

Four invited talks are planned. The speakers will come from France, West Germany, UK and The Netherlands. On the occasion of the Seminar the results of an Italian national survey on "Perception of Physics Teaching by Students" will be reported.

Contact: Prof. Vittorio Zanetti, Dip. di Fisica, Univ. di Trento, 38050 Povo (Trento), Italy

5) Journées Internationales sur la Communication, l'Education, la Culture Scientifiques et Industrielles, Chamonix (France) 24-26 January 1989

This year the theme of the Journées Internationales de Chamonix will be "Les Aides didactiques pour la Culture et la Formation Scientifiques et Techniques".

Didactical apparatus of many kinds will be examined and the discussion will be focussed on the following questions:

\* How adequate are they to the messages we want them to communicate to the pupils or to the general public?

\* How to choose them and how to use them better?

\* How to write the accompanying "software" to optimize teaching effectiveness?

\* Which are the relationships between the learners' interactions with the objects and phenomena of the natural world on one side and with the apparatus we may use for teaching on the other?

\* How does the use of teaching aids affect pedagogical approaches and school activities?

The language of the Conference is french.

Cost: Participation fee (individuals): 500 FF. Accomodation: 130 FF a day at the Centre Jean Franco in Chamonix.

Enrolment: before 10 October 1988

Contact: Christian Souchon, Université' Paris VII, UER de Didactique des Disciplines, couloir 45-46, 2 place Jussieu, 75251 Paris cedex 05, France

6) 6th World Conference on Co-operative Education Hamilton, Ontario, 26 August - 1 September 1989

Contact: Gordon Partridge, Mohawk College, P.O. Box 2034, Hamilton, Ontario, Canada L8N 3T2

## GENERAL INFORMATION

### GIREP COMMITTEE

President Paul Black, Centre for Educational Studies, King's College London (KQC), 552 King's Rd, London SW10 0UA, UK (tel 01/3512488)

Vice-presidents George Marx, Dept Atomic Phys., R.Eotvos Univ., Puskin u. 5, PB 327, 1088 Budapest, Hungary (telex 225459, tel 361/131843)

Piet Lijnse, Rijksuniversiteit, 3508 TA Utrecht, pob 80008, The Netherlands (tel 09/3130531179)

Secretary Silvia Pugliese Jona, via San Nazario 22, 10015 Ivrea (Torino), Italy (tel 0125/49869)

Treasurer Brian Davies, The Institute of Physics, 47 Belgrave Sq, London SW1X 8QX, UK (telex 918453, tel 01/2356111)

### FEES

The yearly fee is equivalent to Lst 10.00 at the rate of exchange current at the date of application for membership or renewal of membership. The sender must pay his or her own bank charges and mailing costs. There are four possible methods of payment. Whichever you choose, please make sure that your name is sent with your payment.

1) Fees from Italy must be paid in Italian Lire to Marisa Michelini, Istituto di Fisica dell'Universita', via Campi 213/A, 41100 MODENA.

2) Fees from countries other than Italy may be paid in Lst, made out to "GIREP account 90301248" and sent to Brian Davies, address at top of page. This is the preferred method of payment.

3) Fees from countries other than Italy or Great Britain may also be paid in Sw.Fr, preferably through bank and not by cheque, to "GIREP account 376089-91", Credit Suisse, 1002 Lausanne, CH.

4) Fees from countries where the above procedures are very difficult or impossible may be paid directly to George Marx after having agreed on a procedure with him (address at top of page).

Please note: The accounting year runs from January to January but if application forms and fees arrive after the month of September membership will - unless the applicant specifies otherwise - become effective at the beginning of the following year.

### APPLICATIONS & NEW MEMBERS

Applicants for membership should please require the application form from the Treasurer.

### INQUIRIES - CHANGES OF ADDRESS

Please address inquiries concerning fees to the Treasurer.

Other inquiries may be addressed to the Secretary or to any other member of the Committee.

Please send notice of changes of address to the Secretary.

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