

# NEWSLETTER

**girep**

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

No. 8 - February 1981.

## 1. Presidential Address.

Dear GIREP members,

Those of you who were so lucky as to take part in the Rehovot Seminar can testify how proud and happy I felt when I was elected to the Presidency of GIREP.

In fact I am convinced that GIREP has played in the past a very important role in Physics education and I hope to be able to keep to an already rich tradition, which offers a wealth of valuable features. They result from the Statutes, from the seven Newsletters already published, and from the publications. I should like to quote the sometimes outstanding professional contributions, the concrete aspects of an early and acute consciousness of the new social implications of Science in general and Physics in particular, and the spreading of useful information; but I would stress one, in my opinion, very important and particular possibility offered by GIREP: that of reinforcing and protracting the pleasant friendly personal contacts which are in general the most relevant even if not directly assessable result of meetings.

In order to make GIREP still more effective it would perhaps be opportune to revise the Statutes, which go back to 1966 and were only slightly modified in 1972: things have changed quite a lot since, and new problems have arisen that we must solve. However, revising the Statutes could prove a rather complicated and lengthy process, so I propose that we formulate a set of By-laws to complement and interpret them.

Further we must conclude the initiatives already started: e.g. the publication "World-wide Systems for the Education and Training of Physics Teachers" and the Seminar on "Nuclear Physics - Nuclear Power" which will take place next September in Hungary. We also ought to start thinking about the 1983 Seminar.

Even though for the moment there will be little possibility to start new projects, our imaginations should be already at work.

I invite all members to join the efforts of the Committee so that from the old and strong tree new and rich fruits will

ripen: the more so if our friends, first of all UNESCO and ICPE, will be with us as they always have been.

Modena January 24, 1981

Arturo Loria

## 2. GIREP 1981 Conference. Nuclear Physics - Nuclear Power.

The next GIREP conference will be held this year in Balaton, Hungary from 6th to 12th September, 1981. The conference will discuss the actual problems of physics education in schools. The main topic will be the nuclear atom: its structure, its challenge, its power and its danger. The impact of these points upon society and upon the education of the new generation has been brought into the focus of worldwide interest by the new energy situation. Speakers from different continents will discuss the physical, technological, pedagogical, social and psychological aspects of the problem. The conference programme will include panel discussions, exhibitions, optional study excursions and school visits. The conference location is Balatonfured, Hotel Annabella, a scenic and historic spot on Lake Balaton, Hungary. Accommodation will be arranged in a moderate priced hotel. A full social programme will be provided, along with the conference programme. The Conference Fee will be 100 U.S. dollars. The number of participants at the conference is limited. IT IS IMPORTANT THAT ANYONE INTERESTED IN EITHER CONTRIBUTING TO, OR ATTENDING, THE CONFERENCE SHOULD CONTACT GEORGE MARX WITHOUT DELAY. Professor George Marx, GIREP '81 Conference Organiser, Department of Atomic Physics, Eotvos University, H-1088 Budapest, Puskin utca 5, Hungary. (Phone (361) 131-843)

## 3. Treasurers Notes.

Those members who have not yet paid their 1981 membership fee are reminded that it is now due, and is 10 U.S. dollars. If any members would like to pay for two years, 1981 and 1982, at the same time this would be appreciated and save administrative costs. Any payments of 10 U.S. dollars for the 1982 subscription paid before September 1981 will be counted as the full fee for 1982 even if the fee is subsequently raised at the next GIREP business meeting to be held at the Balaton Conference in September. Members may pay their fee in one of the following ways :

Payments from Italy, to Marisa Michelini (GIREP Treasurer)  
Istituto di Fisica, Via Campi, 213/A -  
41100 Modena, Italy. (Lit 10,000 per year)

Payments from U.K., to Brian Woolnough (GIREP Secretary)  
Department of Educational Studies, Oxford  
University, Oxford, U.K. (£5 per year)

Payments from Eastern European Countries, to George Marx (GIREP Vice President), Dept. of Atomic Physics, Eotvos University, Budapest, Hungary.

All other payments by means of cheque issued to Credit Suisse Lausanne Switzerland, in favour of GIREP account No. 045-376081-91. (Sfr 10 per year)

## 4. Proceedings of Oxford (1978) and Rehovot (1979).

Members should already have received their copies of both the Oxford and Rehovot GIREP conference reports. (If some who receive this newsletter have not received them it is probably because their membership fee was recorded as having lapsed at the time of the conference). If additional copies are required they are

available as below :

- 1978 Oxford Conference. 'The role of the laboratory in physics education'. Edited by J. G. Jones and J. L. Lewis. 192 pp, flexicover. Price \$10 or £4. Available from B. E. Woolnough, Oxford University, 15 Norham Gardens, Oxford.  
The proceedings of the Oxford Conference are summarised under the headings of aims and organisation of the laboratory, aspects of laboratory work in physics education, project work in physics education, assessment of practical work, electronics, optics and special lectures.
- 1980 Rehovot Conference. 'Physics Teaching'. Edited by Uri Ganiel. 608 pp. Price \$35. Available from (except USA), International Science Services, POB 4059, Jerusalem, Israel or (for USA), Balaban, International Science Services, S.Pomerantz, 2242 Mt.Carmel, Glenside, Pa.19038. This book has two themes, the one aimed at improving and updating the physics curriculum at secondary school level, and the other addressed to social aspects of science in general, and of physics in particular. In the first, oscillations and waves, it was clearly seen that the teaching of this subject must be reconsidered and many new approaches are illustrated. In the second, current problems in physics teaching, three main strands emerged concerning teaching about science and society, teaching of disadvantaged children, higher education and teacher training.

##### 5. ICPE Conference, Trieste, September 1-6th 1980.

A full account of this conference will be found in the ICPE International Newsletter on Physics Education Number 8, but GIREP members may like to hear a little about it here. Hosted by the International Centre for Theoretical Physics at Trieste, 176 participants from 62 different countries attended this most enjoyable conference. The conference concentrated primarily on the teaching of physics in school and devoted special attention to a) current evidence concerning those skills, attitudes and behaviour of teachers which can be shown to encourage successful physics teaching, b) the influence of curricula, examinations and other constraints on teachers' activities, and c) the ways of improving, in the light of the knowledge gained, both the initial training and the continuing training of those who teach physics. Some attention was also given to the education of University lecturers. The general structure was that of a working conference with the mornings devoted to a different theme in plenary session, and the afternoons devoted to workshops, of which 17 were provided. The themes for the morning sessions were 'Teaching interactions' (P. Black), 'Concepts and misconcepts' (R. Sexl), 'Evaluation and assessment' (U.Haber-Schaim), 'Constraints and realities' (S. de Souza Barros) and 'Integration of the work of the conference' (E. J. Wenham). Much useful work was also carried out, as is usual in such conferences, through informal conversations and the interchange of papers. A full and varied social programme cemented relationships and ensured that all had an opportunity to see and share in something of the delightful land of north-east Italy.

Arturo Loria, and his team, are to be thanked and congratulated for organising things at the local level, as are the members of the steering and planning committee, George Marx, Arturo Loria, Martin Cernohorsky and Peter Kennedy.

#### 6. Personal Forms.

It would be helpful, to ensure that GIREP records are kept up to date, if all members receiving this newsletter would complete the enclosed Personal Form and return it to the GIREP President, Professor A. Loria.

#### 7. The GIREP Story.

New members may like to be told, and old members reminded, of the development and activities of GIREP since its foundation in 1966. The account below is given for your interest :

#### GIREP - An Active International Association for the Improvement of Physics Teaching in Schools

revised and updated to 31 December 1980  
by A. Loria and C. Malagodi

#### The Foundation of GIREP

GIREP, Groupe International de Recherche sur l'Enseignement de la Physique, was founded in 1966.

In the years 1960-1964 OECE, later OECD, arranged a series of international meetings to encourage renewal of the teaching of Physics in schools. The meetings proved to be a very valuable source of inspiration for the participants. However, in 1964 OECD decided to concentrate on other fields of activity, and it was made clear that OECD would not support financially future meetings on the teaching of Physics.

A number of persons who had participated in the meetings organized by OECD, with Prof. W. Knecht, Switzerland, as the driving force, found it very important that the series of international meetings on the teaching of Physics in schools were continued. They therefore decided to form an international group working actively for the improvement of Physics teaching in their countries. As a result GIREP was founded March 15, 1966, and Prof. W. Knecht was elected first President.

The present officers of GIREP were elected at Rehovot (Israel) on the 23 August 1979. They are :

President : Arturo Loria (Modena, Italy)  
Vice-Presidents : Paul Black (Chelsea, U.K.) and George Marx (Budapest, Hungary)  
Secretary : Brian Woolnough (Oxford, U.K.)  
Treasurer : Marisa Michelini (Modena, Italy)  
Auditors : Uri Ganiel and Peter Lijnse

The address of GIREP is :

c/o Istituto di Fisica  
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#### GIREP meetings

Very soon it was proven that it was possible for GIREP to organize international meetings.

January 1967 - Lausanne, Switzerland - organized by Walter Knecht

Preliminary informal meeting arranged in collaboration with the international Commission of Mathematics Teaching. The main

topic was the co-ordination of the teaching of secondary level mathematics and physics.

1<sup>o</sup>. 30 October to 5 November 1968, Malvern, U.K. - organized by John Lewis

The participants studied and discussed the Nuffield Physics Project but the main purpose was that of preparing the second Seminar.

11<sup>o</sup>. 30 July to 5 August 1969, Copenhagen, Denmark - organized by Søren Sikjaer

This Seminar was arranged with the purpose of discussing the treatment of energy in the junior high school, and of quantum mechanics and the special theory of relativity in the senior high school.

Financial support was given by the Royal Danish Ministry of Education and the Association of Danish Physics Apparatus Manufacturers.

111<sup>o</sup>. 16-18 March 1972, Kiel, W. Germany - organized by the German Commission for UNESCO

Realized as a joint UNESCO-GIREP meeting on the implementation of curricula in science education with special regard to the teaching of physics.

IV<sup>o</sup>. 14-20 October 1973, Venice, Italy - organized by Arturo Loria

The subject was the teaching of electricity, magnetism and quantum mechanics in secondary schools. There were 95 official participants of whom 41 were GIREP members from 17 different countries. It was suggested that it might be of great inspiration to Italian physics teachers to attend the seminar; hence MPI arranged for the presence of 70 of these teachers as observers.

Financial support came from UNESCO, MPI, CNR, SIF and the Italian UNESCO Commission.

V<sup>o</sup>. 6-10 September 1976, Montpellier, France - organized by Goery Delacôte

The main subjects dealt with were probability and statistics in the teaching of physics in schools and the first steps in the teaching of physics at the beginning of secondary school. As for the participation of French teachers the Seminar was organized in a similar way as the Venice Seminar for Italians. The participants, including the French teachers, were 200 from 29 different countries.

Financial support was granted by UNESCO, the French Ministry of Education, the Societe Francaise de Physique and the Union des Physiciens.

VI<sup>o</sup>. 14-21 July 1978, Oxford, U.K. - organized by Brian Woolnough

Realized as a joint ICPE-GIREP project, on the role of the laboratory in physics education.

The main problems dealt with were : aims and organization of the laboratory, aspects of laboratory work in physics education, project work in physics education, assessment of practical physics, electronics, optics.

Financial support came from UNESCO, COSTED, the British Council, the Commonwealth Foundation of Physics and also some important manufacturers.

VII<sup>o</sup>. 19-24 August 1979, Rehovot, Israel - organized by Uri Ganiel

The subjects were waves and oscillations, and current problems in physics teaching.

Of the 110 participants, over 60 were from 25 different countries.

Financial support came from UNESCO, the Weizmann Institute and several other institutions in Israel.

VIII<sup>o</sup>. Next Seminar

6-12 September 1981, Balatonfüred, Hungary - organized by George Marx.

The Seminar will be realized in the framework of a Conference in co-operation with the Educational Branch of the Roland Eötvös Physical Society.

The main topic will be the nuclear atom: its physics, its challenge, its power and its dangers.

Sponsorship is given by UNESCO, the Hungarian Ministry of Education, the Hungarian Academy of Sciences, the Hungarian Atomic Energy Commission, the Central Research Institute for Physics of Hungary, the Roland Eötvös University in Budapest, and the Kossuth Lajos University in Debrecen.

N.B. For more details and general information see GIREP Newsletter No. 8, Pg 2.

GIREP publications

No.1 A detailed Report of the 1967 Lausanne meeting was published in "Dialectica", Vol. 21 (1967).

No.2 Seminar on the Teaching of Physics in Schools  
At the Royal Danish School of Educational Studies  
Copenhagen, July 30 to August 5, 1969 - P.215  
Edited by Søren Sikjaer. Printed by Gyldendal - Denmark  
1971.

N.B. The contents index appeared in GIREP Newsletter No.1, pg.10.

No.3 Implementation of Curricula in Science Education  
Report of an International Seminar on "The Implementation of Curricula in Science Education with Special Regard to the Teaching of Physics", organized by the German Commission for UNESCO and the Institute for Science Education at the University of Kiel  
Kiel, March 16-18, 1972  
Deutsche UNESCO Kommission, Köln  
Verlag Documentation, Pullach/München  
Price : DM 19.80

N.B. The contents index appeared in GIREP Newsletter No.1, pg.5.

No.4 GIREP, Copenhagen and MPI, Rome  
Seminar on the Teaching of Physics in Schools. 2.  
At Palazzo Sceriman, Venice - 14-20 October, 1973  
Edited by Arturo Loria and Poul Thomsen - P.440.  
Printed by Gyldendal - Denmark 1975. Price: DKR 226.05

N.B. The contents index appeared in GIREP Newsletter No. 1, pg.7.  
The No. 2 in the title refers to a plan adopted by the GIREP Committee (see GIREP Newsletter No. 2, pg.1) according to which the Proceedings from GIREP Meetings should form a series of

similar books called Seminar on the Teaching of Physics 1, 2, 3 ... etc. However this remains the only example where the decision was put into practice.

No. 5 Physics Teaching in Schools

Proceedings of the 5th Seminar of GIREP Montpellier, September 1976

Edited by Goery Delacôte, P.406.

Printed by Taylor and Francis Ltd - London 1978

Price : £20.00

No. 6 The Role of the Laboratory in Physics Education

An account of the Oxford Conference held in July 1978, jointly organized by the International Commission on Physics Education and the Group International de Recherche sur l'Enseignement de la Physique, with support from UNESCO.

Edited by J. G. Jones, Department of Education, University College, Cardiff, and John L. Lewis, Malvern College, Worcestershire, U.K. - P. 192.

Price : £4 or \$10.

Printed by John Goodman and Sons, Birmingham, U.K.

N.B. A detailed report appeared in the American AAPT Announcer (December 1978) and was reproduced in GIREP Newsletter No.7 pg.1.

No. 7 GIREP and the Weizmann Institute of Science, Rehovot, Israel

Physics Teaching

Oscillations and Waves

Current problems

Proceedings of the GIREP Conference held at the Weizmann Institute for Science, Rehovot (Israel) - August 19-24, 1979

Edited by Uri Ganiel

Printed by Balaban International Science Services, Israel and U.S.A., 1980. Price : \$35

No. 8 Due to appear shortly : a GIREP-UNESCO publication  
Worldwide Systems for the Education and Training of Physics Teachers

Edited by Brian Davies and Poul Thomsen.

Membership

Ordinary members who have paid their membership for 1980 are now 332 from 50 different countries. There are three honorary members: Søren Sikjaer, Erwin Baurmann and Poul Thomsen. There are no subscribing members.

How to become a member and the duties and rights of members appears in the Statutes: however there are a few points which must be explained or expanded:

Art. 6 - Also other people interested besides professors and teachers, e.g. students, can be accepted as members of GIREP. The application form, which can be provided on request but is also included in GIREP Newsletters from No 8 on, must be sent to the President of GIREP. As the rejection of an application is certainly a very rare event, as yet none in fourteen years, applicants are warmly invited to pay their membership fee before the formal acceptance: in the event of refusal it will be returned as soon as possible.

Art.17 - The wording is rather ambiguous and it was discussed in the last meeting of the Committee (Trieste, 4 Sept 1980). The unanimous opinion was that any member "has paid his membership for the current year" only if it is paid before the beginning of that same year. So membership for 1981 should have been paid in 1980, and that for 1982 should be paid before 31 December 1981. Some special tolerance is of course in order now, as the traditional way has been abandoned; however members who do not pay their membership fee for 1981 before June 1981 will be considered as resigning, and the deadline for 1982 will be February 1982.

Membership fee is :

§ 5 for 1979; payments from late-comers are exceptionally accepted up to June 1981.

§ 10 starting from 1980.

Payments from Italy, respectively Lit 5.000 and Lit 10.000 can be made directly to Dr. Marisa Michelini, the Treasurer of GIREP, by any system.

Payments from East European countries can be made directly to Prof. George Marx, one of the two Vice-Presidents of GIREP. In the next GIREP Newsletter (No 9) specific instructions will be given. Payments from U.K. can be made direct to Brian Woolnough, Oxford at £5 per year.

All other payments must be made by means of cheque issued to Credit Suisse 1002 Lausanne Switzerland in favour of the GIREP account No.045-376081-91. All other systems of payment (cheques or postal orders issued to GIREP, or to the President, or to the Treasurer) may result in a loss of your money.

It is also necessary that the member, or members, can be easily identified. Payment in groups is strongly recommended to reduce the charges of transferring money which for small sums are quite considerable and not proportional, but instead independent of the amounts.

#### Receipt of Publications

GIREP members are entitled to receive free of charge the Proceedings of the GIREP Seminars. This applies only if they are up-to-date with their membership fees both at the time the Seminar was held and at the time the Proceedings were printed.

For other publications, e.g. "Worldwide Systems for the Education and Training of Physics Teachers" the Committee will decide proper action in each case.

#### A Few Closing Comments

It is quite evident that until now GIREP members have received much for very little.

One reason is that among the GIREP membership there are quite a few people willing to take active part in the meetings and who hold positions in their home countries such as to make it possible for them to obtain national support for participation.

Furthermore the regular publication of the Proceedings from all Conferences, which has always been sponsored by UNESCO, has helped to give GIREP a good image so that it has been relatively easy to obtain additional and substantial support from many public and private bodies.

However, it is clear that should GIREP membership increase by an order of magnitude, these benefits could not be enjoyed by the individual members to the same extent as presently. So people are warmly invited to join GIREP only if they are genuinely and above all, actively interested in the teaching of physics.