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Newsletter

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Welcome to Budapest

by Academician Prof. Tibor Vamos

In a few weeks time, on July 2nd, another great IFAC event, the 9th Triennial World Congress is due to commence in the Hungarian capital. Registrations so far lead us to expect about 1000 participants, control engineers and their families from all over the world to gather in Budapest.

On behalf of the Program Committee and of the Organizing Committee, on behalf of the IFAC Council and on my personal behalf as president of IFAC, I wish to convey to all of you our most sincere greetings of welcome and best wishes for a pleasant and successful stay in Hungary.

In our day-to-day work, when designing and building our automated systems, we realize the relevance of human communication, the perfection of our telecommunication technology emphasizes the need for direct meetings, the most appropriate atmosphere of personal contacts. This is one of the reasons for complementing and completing the vast possibilities of printed, displayed, telephoned exchanges by the always again unique occasions of our congresses. The world is becoming even more partitioned, the numerous small but specialized, narrow band meetings are certainly events in their own rights which cannot and should not be replaced by the big conventions. But similarly the rare occasions of our overall congresses cannot be replaced by symposia and workshops dealing with special topics.

Your hosts' ambition for this 9th World Congress was to create this atmosphere for optimal direct communication by combining both the opportunities for the exchange of specialized experiences and opinions in a series of dedicated colloquia and the great arena of plenary lectures and social get-togethers, where people of various interests can meet and chat, give and take, teach and learn.

Your presence at our congress, your personal contribution and activity towards this target will be much appreciated. Enjoy the opportunity and offer it to all other participants. And do not miss to spare some time before, during or after the congress to get to know something of the history, the culture and the pleasure of Hungary.



Welcome to Budapest — Welcome to the 9th IFAC Congress

Modelling and Control of Electric Power Plants

(Como, Italy, September 22—23, 1983)

78 experts from 16 countries attended the Workshop which was sponsored by the IFAC Technical Committees on Applications, System Engineering and Education.

The National Italian Association for Automation (ANIPLA) and the Centre for the Scientific Culture "A. Volta" had given financial and organizing support to the Workshop.

The IPC—chaired by H. Kwatny (U.S.A.) and composed of 10 members—selected 26 papers for presentation out of 63 submitted abstracts. They were divided into 7 Technical Sessions:

1. Modelling of Thermal Units I
(Chairman: E. Welfonder, F.R.G.)
2. Modelling of Nuclear Units
(Chairman: G. B. Collins, U.K.)
3. Plant Control: Methods
(Chairman: H. Kwatny, U.S.A.)
4. Computer Control Systems
(Chairman: J. Debelle, Belgium)
5. Modelling of Thermal Units II
(Chairman: G. Davoust, France)
6. Man-Machine Systems
(Chairman: M. Larsen, Denmark)
7. New Generation Processes
(Chairman: C. Maffezzoni, Italy)

The principal scope of the Workshop was that of presenting a first "state of the art" in the multidisciplinary field of the applications of System and Control Concepts to Electric Power Plants. It was the first IFAC initiative in the field, and successfully attained its goal.

Experts came mostly from technological countries and from very different experiences (utilities, plant manufacturers, computer system suppliers, universities, state agencies, consulting companies) thus presenting a rather complete picture of research trends, applications and points of view.

The most outstanding effort appeared to be in the area of process modelling and, in particular, of the development and validation of reliable computer codes for computer aided modular modelling applied both to fossil fired and nuclear generating plants (6 papers). Special problems arising in modelling plant components or subsystems were also dealt with in 5 papers, while compact plant models for cheap simulation of boiler-turbine units were the subject of 3 papers. The application of advanced control techniques for fossil fired and nuclear power plants were considered in 4 papers; 3 papers described features and benefits obtained by more or less specialized computer control systems, while the peculiar problems of the man-machine interaction in large power plants were analyzed in 2 papers presenting actual projects of quite a wide interest. Significant attention (3 papers) was further paid to the interaction between economic optimization and dynamic control in the conception and operation of new energy processes.

A distinguishing aspect of the Workshop was the relevant contributions coming from the intense discussion stimulated by most of the participants.

The round table discussion on Computer Modelling in Plant Design, Control and Operation showed the wide interest and the considerable research for a more systematic approach to physical process modelling, as a rational support of system design and optimization. In particular, a survey of the research on digital simulation systems and of their continuous development was given by representatives of the most important European utilities. The need to promote applications of advanced control systems was also identified as one of the most challenging tasks, because of the generally conservative position of plant owners and operating personnel. Real time simulators for personnel training were recognized as playing

Workshop on Management Control Systems: Modelling the Dynamics

(Dubrovnik, Yugoslavia 4—7 May 1983)

This has been the fourth workshop sponsored by the TC on Economic and Management Systems (EMSCOM) through its Working Group 2, "Management planning and control in industrial organizations", the previous ones having been held in Enschede, Netherlands (1974), Varna, Bulgaria (1977), Hertford, England (1980). The present workshop was organized by the Yugoslavian NMO, ETAN (Society for Electronics, Telecommunication, Automation and Nuclear Physics).

At the outset of the workshop, due warning was given to all participants not to be overly optimistic in their expectations of what can be achieved with control theory in managing organizations and national economies. Formal theory has its limitations in applicability and a survey of causes for failure or success of quantitative methods in management was given.

Most technical papers fairly closely stuck to the central theme of the workshop, viz. modelling the dynamics. The object studied might be an organization of associated labour (being the unique Yugoslavian concept of a firm), it might be a regional socio-economic system or, for that matter, a national economy or the globe.

Input-output analysis of an organization of associated labour is intrinsically multidimensional. A single output criterion like profit will not do. Nine target variables for such an organization have been distinguished and their weights determined by a Delphi method.

Most models were of the systems dynamics type. They had been put to use for policy analysis, stability analysis, etc., using simulation. The models originating from the Faculty of Organizational Sciences of the University of Belgrade had been computed with SDS (System Dynamics Simulation), an interactive, adapted DYNAMO type of language on their PDP11. Other models used DYNAMO. Special aspects of organizations and economies studied were, e.g.,

an important role in enhancing confidence in the potential of new methods and technologies.

In his closing speech H. Kwatny remarked that this first Workshop sponsored by IFAC, in spite of its relevant success and participation, only had the task of breaking the surface of the huge work actually done to improve energy generation processes, especially by the application of System Engineering concepts and advanced microprocessor technology. He, therefore, stressed the need of a further widening of the impact of IFAC in the considered technological area. The main scope should be the circulation of relevant information on advanced studies and realizations, independently carried out by the various national associations and companies. Further initiatives by IFAC on the same topic were finally recommended.

Publication of the Proceedings of this Workshop is under consideration.

C. Maffezzoni

- multiplier effects;
- dynamic inventories;
- unstable competition;
- production priorities;
- vertical integration;
- investment decision making;
- impact of quality control.

The last session was devoted to an evaluation of the workshop and suggestions for the future. The following items are noteworthy.

1. Dynamics is one of the crucial interests of management. However, control theory is not enough adapted to management. Problems needing special attention with a view to management are:
 - nonlinear high-order stochastic systems;
 - Short-term stability analysis and sensitivity analysis.
2. Topics for future workshops were proposed.
3. This workshop was not purely paper-oriented, yet it was based rather heavily on the presentation of papers. A workshop would benefit from being more problem-oriented, i.e. more emphasis should be laid on discussing general issues.
4. Some participants expressed the wish that all papers should be made available before the workshop and be published afterwards. However, this would infringe upon the character of an IFAC workshop, which is of an informal nature. But authors should be encouraged to bring sufficient copies of their papers to the workshop.
5. How to get the right number and the right kind of participants to a workshop? More people might be invited personally. They should know as soon as possible what program they can expect. Particular efforts should be made to attract more participants from different countries, more users (managers, politicians), and more economists (as intermediaries between control theorists and users).

M. Rajkov (Chairman NOC)
C. B. Tilanus (Chairman IPC)

Book News



Applications of Nonlinear Programming to Optimization and Control

Proceedings of the 4th IFAC Workshop, San Francisco, USA, 20-21 June 1983, Edited by H. E. Rauch, Lockheed Missiles and Space Co. Ltd., Palo Alto, CA, USA.

The increasing availability of advanced software and the decreasing cost of digital computation are focusing attention on sophisticated numerical methods. Workers in many countries are developing and applying nonlinear programming methods to solve practical control problems. These proceedings represent the latest work on applications of nonlinear programming to optimization and control. The papers cover a wide range of related topics, starting with computer aided design of practical control systems, continuing through advanced work on quasi-Newton methods and gradient restoration algorithms, culminating with specific examples which apply these methods to representative problems.

150 pp US \$ 45.00 £ 25.00

Distributed Computer Control Systems 1983

Proceedings of the 5th IFAC Workshop, Sabi-Sabi, Transvaal, South Africa, 18-20 May 1983. Edited by M. G. Rodd, University of the Witwatersrand, South Africa.

Presents and discusses the major recent advancements in theory, applications and technologies for distributed computer control systems. Major topics covered include:

- Foundations for distributed computer control systems
- Current applications
- Real time issues
- Communication in distributed computer control systems
- Function distribution
- Local applications of distributed computer control systems.

187 pp US \$ 56.00 £ 31.00

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Technological Advances and Development

UNIDO prepares for Fourth General Conference

The next few years will be crucial for the Third World in its attempt to attain a 25 per cent share in global industrial production by the end of this century. The Fourth General Conference of UNIDO, scheduled to be held August 1984 in Vienna will be faced with the challenge of devising new strategies, policies and programmes to assist developing countries achieve their industrial development objectives.

As part of its preparatory activities for the Conference, UNIDO convened five high-level expert group meetings last year in various regions, on the following topics:

- Technological Advances and Development (Tbilisi, USSR);
- Industrial Development Strategies and Policies for Developing Countries (Lima, Peru);
- Accelerated Development of Human Resources for Industrial Development (Yaoundé, United Republic of Cameroon);
- Industrial Cooperation among Developing Countries (Bangkok, Thailand);
- Energy and Industrialization (Oslo, Norway).

Of particular interest to IFAC was the International Forum on Technological Advances and Development. It examined the potential and limitations of selected technological advances for the industrial and economic development of developing countries and identified policy actions to be taken by Governments of these countries to help strengthen specific industrial and technological capabilities.

The Forum discussed genetic engineering and biotechnology, microelectronics, materials and related technologies, petrochemicals and energy from biomass and solar photovoltaic cells. Some of the technological advances were of substantial potential advantage to developing countries if applied in a manner suitable to conditions there. They presented these countries with a challenge as well as an opportunity, the meeting participants agreed.

In a speech to the Forum, Dr. Abd-El Rahman Khane, UNIDO Executive Director, reiterated an appeal to Governments of third world countries to invest at least two per cent of their gross national product in scientific and technological education to reach or to come closer to the target of 25 per cent — one of the objectives agreed on at the Second General Conference of UNIDO at Lima in 1975.

Dr. Khane said that an understanding of the new technologies and the development of the capability to use them was at the core of the development strategies of the future.

The report of the Forum foresees that the technological advances could help developing countries in leap-frogging some of the traditional hurdles encountered on the road to industrial development. It states that these cannot, however, serve as an escape route

from all problems and warns developing countries not to follow blindly the high technology path of industrialized states.

The Forum wished to bring to the attention of UNIDO IV that the industrial and technological policies for the 1980s and beyond will have to be framed in the light of the potentialities and implications of the new technological advances. It recommended that developing countries individually or collectively examine their existing state of technological capabilities and take steps to create and reorient their institutions and structures as necessary and appropriate to respond to technological change in accordance with their own objectives and conditions.

Short-term actions by developing countries would include forecasting and assessment of the socio-economic impact of technological advances, careful choice of technologies and equipment to be imported and the strengthening of the negotiating capability for their acquisition. Long-term actions will call for imaginative attempts to apply the technological advances for improving the standard of living and upgrading the general technological level of the population as a whole. Taken together, such responses should be made as a strategic activity involving, where necessary, structural changes in the industrial and economic development of the country.

While calling for new ways of strengthening co-operation between developed and developing countries in this field, the Forum recommended that co-operation among developing countries should increasingly incorporate activities relating to acquiring self-determination and technological capability in the field of new technologies. It recommended that UNIDO continue to mobilize the co-operation of high-level scientists and technologists in the world for harnessing the new technologies for the benefit of the developing countries, in particular in the field of industrial development. The Forum further proposed that a new form of international co-operation be considered with the designation of a limited number of advanced technologies to meet particular needs of the clear and urgent character to the human community as "Technologies for Humanity". These technologies will be developed and disseminated in the public domain.

*

IFAC has been invited to participate in UNIDO IV and has accepted this invitation. Our representatives shall inform on IFAC activities in this field, referring to Symposia and Workshops sponsored or co-sponsored by DECOM (e.g. 1983 Symposium on Systems Approach to Appropriate Technology Transfer). Further input is expected to come from the Budapest Congress, where several discussions and colloquia will deal with topics relevant to developing countries.

Details on UNIDO may be obtained from
Vienna International Centre
(UNIDO IV)
A-1400 Vienna, Austria

Time Table IFAC Committee Meetings

In conjunction with the ninth IFAC World Congress in Budapest several IFAC Committees will also meet there. Here is a provisional time schedule containing those meetings of which the IFAC Secretariat has been notified.

(Como, Italy, September 22 - 27, 1984)

COMMITTEE	DATE	TIME	
		a.m.	p.m.
Technical Board (old)	June 29	9-12	2-6
Technical Board (new)	July 7	9-12	
Executive Board (old)	June 29		2-6
Executive Board (new)	July 7	9-12	
Finance Committee	June 28	9-12	
Policy Committee	June 28		2-6
Publications Committee	June 29	9-12	
Publications Managing Board	July 5	9-	open end
Automatica Editorial Board	July 4	9-12	
Council (old)	July 1	9-12	2-6
Council (new)	July 7		2-6
GENERAL ASSEMBLY	July 2		4-6
Technical Committees:			
APCOM	July 3	10-12	2-6
BIOMED			
COMP & INSTR	July 3	10-12	
COMPUT	June 28		1-6
DECOM	July 5	10-12	
EMSCOM	July 4		5-6
EDCOM	July 6	10-12	
MAN. TECH.			
MOC	July 3		5-7
SOC. EFF.	July 1		7
SPACE	July 3		6-7
SECOM	June 28		2-6
TERM & STAND	June 28		2-5
THEORY	June 28		2-6
Other Meetings:			
APCOM WG Electric Power	July 2		4-5
SECOM WG SWIIS	July 3		12,30-3,30
Monograph	July 3		
IPC Digital Control Symp.	July 3		5-7
IPC Transportation Systems Symp.	July 5		5-6

WHO IS WHO IN IFAC



George S. Axelby
Editor-in-Chief of Automatica

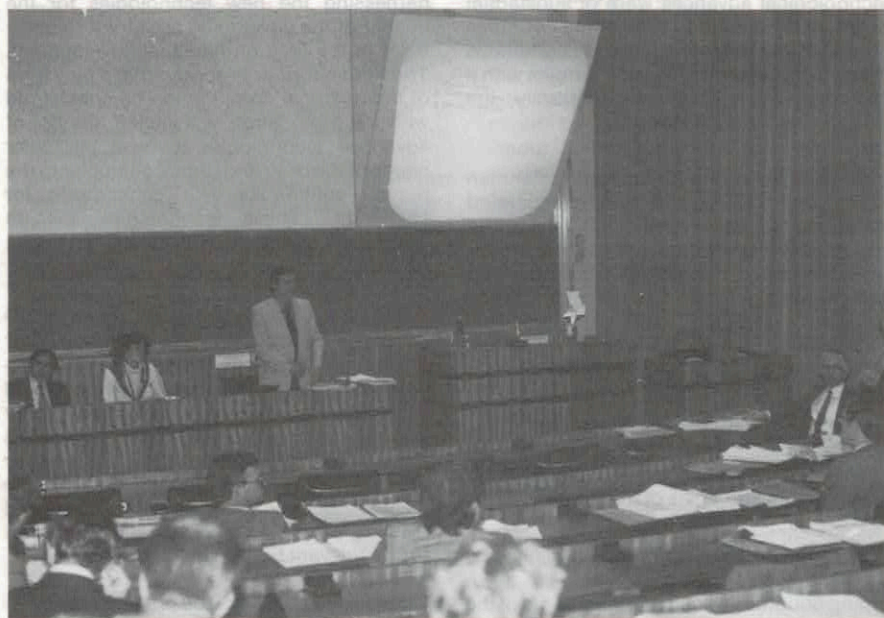
Born on March 7, 1922 in Thomaston, Connecticut, U.S.A., he graduated in 1950 with the Highest Distinction from the University of Connecticut with a B.S.E.E. degree. He was granted a Westinghouse Fellowship to obtain a Masters Degree from Yale University in 1951. Since that time he has worked on a wide variety of projects not only in Baltimore, where he is now a Senior Advisory Engineer, but also in other Westinghouse Divisions and has published many papers, articles, editorials, and chapters of books on automatic control technology.

In 1954 he became the first editor of a new journal, the IRE (Institute of Radio Engineers) Transactions on Automatic Control. In 1963 the IRE merged with the AIEE to become the IEEE (Institute of Electrical and Electronics Engineers), and he continued as Editor of the IEEE Transactions on Automatic Control until 1968 when he was invited to become the first Editor of Automatica, the official Journal of IFAC. He was awarded an IEEE Special Service Award for his work in establishing the IEEE Transactions on Automatic Control, and in 1983 he was elected a Distinguished Member of the IEEE Control Systems Society.

When he became Editor of Automatica, he appointed a number of well known control system experts from various parts of the world as Associate Editors to evaluate papers for possible publication. In 1981 the Editorial Staff was enlarged. He became Editor-in-Chief and 7 special Editors were appointed to procure and evaluate papers from IFAC meetings and other sources, to provide Book Reviews, to promote rapid publications in the form of Technical Communiques, and to procure significant Survey Papers. Mr. Axelby has attended all the IFAC Congresses and numerous IFAC Symposia.

Under his editorship Automatica has become a renowned and esteemed professional journal. It constitutes one of the most important activities of IFAC; its increasing circulation throughout the whole world bears witness to its value and quality. And at the same time George Axelby has become one of the best known, best liked and longest serving officers of IFAC.

At present he lives in North Linthicum near Baltimore, Maryland, with his wife, Alice. In addition to Automatica and IFAC, his outside interests include tennis, golf, photography, art and music.



IFAC Technical Board discussing forthcoming Symposia and Workshops during its meeting in Laxenburg.

FORTHCOMING EVENTS

Title	1984	Place	Deadlines	Further Information
9th WORLD CONGRESS	JULY 2-6	BUDAPEST, H	—	Computer and Automation Institute Hungarian Academy of Sciences P. O. Box 63 H-1502 Budapest, Hungary
				
IFIP/IFAC Conference Human Factors in Computer Systems Human-Computer Interaction INTERACT '84	Sept. 4-7	London, UK	—	Prof. B. Shackel Dept. of Human Sciences University of Technology Loughborough Leicestershire, UK
IFAC Workshop Reconfigurable Spacecraft Systems Autonomous and Non-Autonomous	Sept. 11-13	Cambridge MA, USA	—	John W. Hursh Aircraft and Spacecraft Division The Charles Stark Draper Lab., Inc. 555 Technology Square Cambridge, MA 02139, USA
1985				
IFAC/IFORS/IFIP Workshop Artificial Intelligence Pattern Recognition in Economics and Management	March 12-14	Zurich, CH	Aug. 1, 1984	Prof. L. F. Pau Battelle Institute 7, Route de Drize CH-1227 Carouge Switzerland
6th IFAC Workshop Distributed Computer Control Systems	May 19-24	San Francisco, CA, USA	not yet known	Dr. R. W. Gellie CSIRO P.O. Box 71 Fitzroy, 3065 Australia
IFIP/IFAC Conference Programming Languages for Machine Tools (PROLAMAT)	June 11-13	Paris, F	—	AF CET 156, Bd. Pereire F-75017 Paris, France
IFAC Workshop Control Application of Nonlinear Programming and Optimization	June 11-14	Capri, I	Nov. 30, 1984	Prof. G. Di Pillo Dipartimento di Informatica e Sistemistica Universita di Roma „La Sapienza“ Via Eudossiana 18 I-00184 Rome, Italy
IFAC Workshop Model Error Concepts and Compensation	June 17-18	Boston, MA, USA	not yet known	Prof. R. E. Skelton Purdue University Aeronautics & Astronautics 331 Grissom Hall West Lafayette, IN 47907, USA
IFAC/ISAGA Workshop Simulation and Games	June 24-26	Alma-Ata, SU	not yet known	Acad. V. A. Trapeznikov Institute of Control Sciences Profsojuznaja 65 Moscow 117342, USSR
IFIP/IFAC Symposium Automation for Safety in Shipping and Offshore Petroleum Operations — ASSOPO '85	June 25-27	Trondheim, N	not yet known	The Norwegian Society of Automatic Control Kronprinsens gt. 17 Oslo 2, Norway
IFAC Symposium Automatic Control in Space	June 25-29	Toulouse, F	June 30, 1984	Prof. M. Pelegrin CERT Complexe Aérospatial de Lespinet 2, Avenue Edouard Belin BP 4025 F-31055 Toulouse Cedex France

FORTHCOMING EVENTS (ctd.)

Title	1985	Place	Deadlines	Further Information
7th IFAC/IFORS Symposium Identification and System Parameter Estimation	July 3—7	York, UK	—	Prof. H. A. Barker University College of Swansea Dept. of Electrical and Electronic Engineering Singleton Park Swansea SA2 8PP, UK
1st IFAC Symposium Automation for Mineral Resource Development	July 9—11	Brisbane, AUS	—	Prof. Alban J. Lynch Julius Kruttschnitt Mineral Research Centre University of Queensland Isles Road, Indooroopilly, QLD 4068 Australia
IFAC Symposium Planning and Operation of Electric Energy Systems	July 22—25	Rio de Janeiro, BR	June 1, 1984	T. E. DyLiacco Consultant 651 Radford Drive Cleveland, OH 44143 USA
3rd IFAC/IFIP Symposium Computer Aided Design in Control and Engineering Systems	July 31— Aug. 2	Copenhagen, DK	Sept. 1, 1984	Prof. P. M. Larsen Electric Power Engineering Building 325 DK 2800 Lyngby, Denmark
Regional Conference Control Science and Technology for Development	August 20—22	Beijing, PRC	not yet known	Prof. YANG Jiachi Beijing Institute of Control Engineering P.O. Box 2417 China
2nd IMACS/IFAC/WGMA Intl. Symposium Systems Analysis and Simulation	Aug. 26—31 1985	Berlin GDR	abstracts: Aug. 15, 1984	Organizing Committee 2nd Intern. Symposium on Systems Analysis and Simulation Central Institute of Cybernetics and Information Processes of the Academy of Sciences of the GDR P.O.B. 1298 DDR-1086 Berlin
2nd IFAC/IFIP/IFORS/IEA Conference Analysis, Design and Evaluation of Man-Machine Systems	Sept. 10—12 1985	Varese, I	Sept. 15, 1984	Prof. Dr. Ing. Gunnar Johannsen Laboratory for Man-Machine Systems (FB 15) University of Kassel (GhK) P.O. Box 10 13 80, D-3500 Kassel, FRG
7th IFAC/IFIP/IMACS Symposium Digital Computer Application to Process Control	Sept. 17—20 1985	Vienna, A	—	Dr. P. Kopacek Ö P W Z Postfach 131 1014 Vienna, Austria
4th IFAC Workshop Safety of Computer Control Systems (SAFECOMP '85)	Oct. 1—3 1985	Como I	not yet known	Dr. E. DeAgostino Senior Research Engineer ENEA — Dip. Reattori Termici, CRE-Casaccia Via Anguillarese 301 I-00060 Rome, Italy
IFAC/IFORS Symposium Systems Analysis Applied Water and Related Land Resources	Oct. 2—4 1985	Lisbon, Portugal	Nov. 15, 1984	Prof. Luis Valadares Tavares APDIO Av. Rovisco Pais 1000 Lisbon, Portugal
1st IFAC Symposium Robot Control	Nov. 1985	Barcelona, E	—	Prof. G. Ferrate Polytechnic University of Barcelona Via Augusta 242 Barcelona, Spain
IFAC Workshop Automatic Control in Petroleum, Petrochemical and Desalination Industries	Nov. 18—20 1985	Kuwait	not yet known	Dr. Jaafar Assiri c/o Dr. Samir Kotob TED/ASD Kuwait Institute for Scientific Research P.O. Box 24885, Safat, Kuwait
1st IFAC Symposium Modelling and Control of Biotechnological Processes	Dec. 11—13 1985	Noordwijker- hout, NL	Oct. 1, 1984	Prof. Dr. A. Johnson Lab. voor Fysische Technologie Prins Bernhardlaan G 2628 BW Delft The Netherlands