IFAC
INTERNATIONAL FEDERATION
OF AUTOMATIC CONTROL

Information Bulletin n°15

July 1963

Editor: Professor Ing. Dr. V. Broida
Honorary Editor of IFAC

Distributed by the Secretary of IFAC:
79, Prinz-Georg-Str., Düsseldorf (Germany)

CONTENTS

IFAC NEWS

Meeting of the Executive Council

MAIN TOPICS OF THE MEETING

The Executive Council of IFAC held a meeting at Zurich, Switzerland, on 27th and 28th March, 1963 which was also attended by the Chairmen of IFAC Committees.

The Audit Report for 1962 and the Budget for 1963 as submitted by the IFAC Treasurer were approved by the Executive Council.

Particular stress was laid on the discussion of matters relating to the forthcoming IFAC Congress. In addition to the preprints of papers which will probably be available by July this year, preprints of survey papers will be delivered prior to the Congress in an English and a Russian edition.

The reports of IFAC Technical Committees reproduced on the following pages in an abbreviated form resulted in some further recommendations made by the Executive Council for the purpose of advancing and promoting the work of Technical Committees of IFAC.

For instance, in order to facilitate the task of the Bibliography Committee in preparing the IFAC Bibliography, it has been recommended that Documentation Centers in member countries of IFAC should be asked for support in providing material for the Bibliography.

The Education Committee was invited to work out a programme for technical lectures in countries in course of development to be organized for automatic control specialists. The financial support of UNESCO will be asked for.

One of the items of the agenda dealt with the preparatory arrangements for the new elections to the Executive Council to take place at the next General Assembly in Basle. A recommended slate of officers for the next term was established.

A decision on where the Third Congress of IFAC in 1966 should be held was also taken. The invitation extended by the British Conference on Automation and Computation was accepted. The invitation to Budapest extended by the Hungarian National Committee of IFAC was put off until a later time.

PRESIDENT'S REPORT TO THE EXECUTIVE COUNCIL
on March 27, 1963 (abbreviated)

Member Organizations of IFAC

IFAC has now got 27 National Members.

Papers for the Second IFAC Congress

I n v i t a t i o n s t o A u t h o r s

The "Invitation to Authors" to offer a paper to the Second IFAC Congress in July 1961 was edited by the Honorary Secretary (Dr. Ruppel, Düsseldorf, Germany) and distributed to the National Members in August 1961. The dead-line for the papers was 1st September, 1962. Most of the papers arrived within this date at Düsseldorf or Moscow, some papers one to three months later. The total number of offered papers was 275.

S e l e c t i o n o f p a p e r s

The selection of papers was done by IFAC officers, whose names are indicated on page 3 of the "Advance Program". The papers have been mailed from Düsseldorf to the Chairmen or Vice-Chairmen of the Technical Committees and then to the Reviewers. These gentlemen, chosen from various countries, experts in the different fields of automatic control, had to answer to the following four questions:

1. Novelty or newness
2. Technical level
3. Clarity or clearness
4. Length.

The names of these 200 reviewers are not published. The answers of the reviewers arrived in time. Therefore, the Selection Committee could meet in Zurich on 29th and 30th November and 1st December, 1962, for the final selection. 157 papers were selected; the reason for this reduced number was, not to overcharge the Second IFAC Congress. On the late evening of 1st December, the whole selection work was finished and the papers could be given to the Publishers in London and Moscow.

I would like to thank all the reviewers and the members of the Selection Committee for their efficient work.

The procedure of IFAC for the selection of papers whilst being very time-consuming should assure a high quality of the papers including the possibility to get the preprints two months before the Congress.

P r e p r i n t s

The preprints will be published in English (partly in French) by Butterworths, London, and in Russian by the USSR Academy of Sciences. Butterworths works together with Oldenbourg at Munich, Germany.

The summaries of the papers were translated into German, French, and English for the English version and they will be printed in a small booklet separated from the preprints.

The survey papers will not be included in the preprints.

P r o c e e d i n g s

The English proceedings will include:

1. The survey papers
2. The discussion papers
3. The summaries in English, French and German
4. The discussions.

The proceedings will appear early in 1964 in two volumes of 500 to 600 pages each.

Butterworths has the copyright. Editors of the proceedings are:

Prof. B r o i d a , Paris (France)
Mr. B a r l o w , London (United Kingdom)
Prof. S c h ä f e r , Aachen (Germany).

Organization of the Second IFAC Congress in Basle 1963

P r o g r a m a n d F o r m s

This important work was done by the IFAC Secretary in Düsseldorf and the Swiss Federation of Automatic Control. In January 1963 we had to establish the definite time table for the sessions, the conducted tours and the social events as well as to fix all prices. The Swiss Federation (SGA) mailed more than 10,000 "Preliminary Programs" in February 1962. The "Advance Program" was printed in 20,000 copies and mailed after 15th March to the National Members. The inscription forms were mailed directly to the National Members. These were asked to distribute the Advance Program and the Inscription Forms to their individual members.

The "Advance Program" gives a short description of the Congress and the Scientific Program. There is also a list of the 157 papers presented at the 51 sessions.

The four Inscription Forms I to IV have to be mailed to the Congress Secretary, Dr. Anton von S c h u l t h e s s, Wasserwerkstrasse 53, Zurich 6/Switzerland. All payments are to be mailed to the Union Bank of Switzerland, Zurich. The hotel accommodation will be confirmed by the Travel Office KUONI, Basle.

C o n g r e s s S e s s i o n s

The Congress will include 51 discussion sessions.

25 sessions will deal with Theory
19 sessions will deal with Applications
7 sessions will deal with Components.

The survey papers will be read in the largest Congress Hall with simultaneous translation in the four IFAC languages (English, French, German, Russian) and all attendants can be present.

In the discussion sessions, however, there will be no simultaneous translation; language difficulties will be overcome by friendly help of the session chairmen or the attendants. There are always four discussion sessions in parallel.

S c i e n t i f i c S e c r e t a r i e s

As a novelty, similar to the IFIP Congress, 16 scientific secretaries are foreseen with Mr. Ernst R u o s c h, Treasurer of the Swiss Federation of Automatic Contro, as chairman.

These secretaries have to collect the discussion remarks and if necessary to translate them into English (or Russian) together with the people taking part in the discussion.

D i s c u s s i o n s

The author will not be allowed to read his paper, but he may speak on the latest developments he has accomplished since he wrote his paper.

The chairmen of the sessions are entitled to limit the time allotted to the speakers in the discussions. If a discussion cannot be finished in time, the chairmen may arrange to continue the next day. For these cases small discussion rooms will be provided.

The attendants should be asked to type-write their discussion remarks before the Congress, after having received the preprints, The main part of the Congress time is indeed reserved for discussions. The National Members are asked to insist on the preparation of the discussions.

B i b l i o g r a p h i c a n d S c i e n t i f i c E x h i b i t i o n

In the INEL Exhibition Building there will be organized an Exhibition of Books, Proceedings, Reports etc. on automatic control. National Members, Universities and Booksellers may participate. The organization will be made by the Bookseller: Wepf & Co., Eisengasse 5, Basle.

Opportunity is offered to Universities and non-profit scientific research institutes to show some of their research and development work in the field of automatic control and/or Industrial Electronics without having to pay fees for the Exhibition ground.

Next General Assembly of IFAC

This meeting is planned for

31st August, 1963, afternoon, at Basle.

INEL 1963

In connection with the Congress, the Exhibition INEL 63 will be displayed. More than 300 firms will show parts of their production program in the field of Industrial Electronics and Automatic Control from 2nd to 7th September 1963.

UATI (Union of International Engineering Organizations)

UATI gave an amount of 400 US Dollars for the publication of the Proceedings of the Rome Symposium in April 1962. The English version will be published by the Instrument Society of America. The title will be:

Proceedings of the First International IFAC Symposium on Optimizing and Adaptive Control, Rome 1962.

The Committee on Terminology received 400 US Dollars and made a reprint of the former publication on

Seven Examples for the Application of Graphical Symbols to Automatic Control.

Thanks

The President thanks the many gentlemen who during the last year have contributed to the development of IFAC and to the organization of the Second IFAC Congress in Basle. He appreciates the work done by the reviewers, the IFAC officers, the organizing Swiss Committee and last not least, of the Congress Secretary, Dr. A. von Schulthess.

REPORT OF THE CHAIRMAN OF THE IFAC TECHNICAL COMMITTEE ON THEORY, ACAD. B.N. PETROV (USSR)

Structure and Composition

As decided at the Committee's plenary meeting of 29th June, 1960, subcommittees were established:

1. on continuous systems theory
   Chairman: Dr. Beneš (CSSR)
2. on discrete systems theory
   Chairman: Prof. Tsypkin (USSR)
3. on optimizing and self-adaptive systems theory
   Chairman: Prof. Truxal (USA)
4. on the theory of switching systems and finite automata
   Chairman: Acad. Moisil (Roumania).

The Committee comprises 35 scientists from 20 countries. The IFAC National Member Organizations nominated some additional representatives for subcommittees. In this way now the total number of members of the Committee is 57.

The Committee Meetings

A meeting was held on 28th April, 1962 in Rome when the First Symposium on Theory of Optimizing and Self-Adaptive Systems took place. The following problems were discussed: preparation for a symposium on Theory of Switching Systems and Finite Automata; reviewing and selection of papers for the 2nd IFAC Congress; plans of the Committee's activity in 1962-1963.

On 28th September, in Moscow a meeting of the subcommittee on Switching Systems and Finite Automata under the chairmanship of Academician Moisil (Roumania) was held. The meeting discussed the results of the Symposium on Switching Systems and Finite Automata, draft resolution of the Symposium as well as organizational problems of future symposia and meetings on theory of switching systems and finite automata and on its specialized problems.

Symposium on Optimizing and Self-Adaptive Systems Theory

The IFAC Technical Committee on Theory has done a great amount of preparatory work for this Symposium. The Italian Commission on Automation which is the Italian Member Organization of IFAC kindly agreed to hold the Symposium in Rome and set up the Organization Committee.

The chairman of the Subcommittee on Optimizing and Self-adaptive Systems Theory, Professor Truxal, developed the Symposium scientific programme based on papers presented and has done other work for the preparation of the Symposium.

The Symposium was held from 25th to 28th April 1962. Sixty-five experts from 17 countries participated, 18 papers were presented. More than 50 scientists took part in the discussions.

Detailed information on the Symposium was published in the IFAC Information Bulletin no. 13. I should like to appreciate the great support given by the Italian Commission on Automation and by its President, Professor Marino, and its Secretary, Mr. Piscicelli, as well as by the Chairman of the Subcommittee, Professor Truxal, and the Secretary of IFAC, thanks to whom the Symposium was very successful.

Symposium on Theory of Switching Systems and Finite Automata

In accordance with the plan of the IFAC Theory Committee, the Committee and the USSR National Committee on Automatic Control organized the Symposium on Switching Systems and Finite Automata which was held from 24th September to 2nd October, 1962 in Moscow. The number of papers totalled 76. The abstracts of the papers had been published in English and Russian and distributed among the delegates before the Symposium.

Problems of reliability and encoding, methods of switching systems synthesis, minimization of Boolean functions, synthesis of bridge structures and mechanization problems attracted a great attention.

The Symposium showed the great significance of the works presented for development of a general theory of automata and stimulated further activity in this field. Many concepts and ideas presented at the sessions will be a basis for new research. The Symposium also showed that such a constructive discussion of a limited scope of specific problems was very fruitful.

Detailed information on the Symposium was published in the IFAC Information Bulletin no. 14.

I should like to appreciate the great support given by the USSR National Committee on Automatic Control and its President, Academician T r a p e z n i k o v, as well as by the Vice-Chairman of the Organizing Committee, Professor G a v r i l o v, and by the Chairman of the Subcommittee, Academician M o i s i l.

Preparations for the 2nd IFAC Congress

125 papers on theory of automatic control have been reviewed. Most of them were reviewed by experts who were from other countries than the authors. As a result eighty-two papers were approved and forty-three rejected. I have the pleasure to note the great contribution made by the Vice-Chairman of the Committee, Professor W e s t c o t t.

Preparation for future symposia

Following its own decision of 28th April, 1962, the Committee has started to discuss the organization of a symposium on theory problems during the period between the 2nd and the 3rd Congress and to consider suggestions made on this matter.

The Yugoslavian National Organization suggested that a

Symposium on Sensitivity Analysis of Nonlinear Systems

should be held in April and May 1964 in Dubrovnik (Yugoslvia) and has presented a draft program. The Committee suggests that such a Symposium should be approved.

The National Physical Laboratory (UK) suggested that the 2nd Symposium on

Optimal and Self-adaptive Systems

should be held in London.

The Committee took into consideration the invitation made by Academician M o i s i l (Roumania) to take part in the

National Conference on Synthesis of Switching Systems

supposed to be arranged by the Roumanian National Organization in 1964 in Bucarest.

Third plenary meeting of the Theory Committee

A plenary meeting will be convened for 27th August, 1963, at Basle.

REPORT OF THE CHAIRMAN OF THE IFAC TECHNICAL COMMITTEE ON APPLICATIONS, MR. W.E. MILLER (USA)

The Committee Chairman has been approached by numerous National Organizations, Engineering Federations and Trade Organizations with requests for IFAC support of Specialized International Symposia. Most requests were received too late for bonafide IFAC participation and were not officially sponsored or supported.

The Committee did participate in the scientific sponsorship of an "International Seminar on Automatic Control in the Iron and Steel Industry" held in Brussels 19th to 23rd February, 1962. This seminar was organized by the Institut Belge de Règulation et d'Automatisme. The seminar was supported by the "European Coal and Steel Commonwealth" and in the opinion of all participants was a great success. IFAC was advised well in advance and participated in securing of papers and in organization of the program. The Institut Belge de Régulation et d'Automatisme is to be congratulated for their contribution to improve understanding of technology and benefits of automatic control in iron and steel making processes.

Committee members and reviewers suggested by the National Organizations did an outstanding job in reviewing and classifying the many applications papers for the 2nd IFAC Congress. Many authors have written to express their appreciation for the constructive suggestions made by the reviewers.

The Committee will hold a meeting during the Second Congress.

Congress papers and current technical literature indicate significant interest, activity and progress in the fields of process dynamics, on line digital computer control of processes, feedback control of qualities of finished products and optimizing of process operations. Congress authors will be urged to present results of actual operating performance and experience during their presentation. Reviewers will be urged to orient their oral presentation on the same basis and to deliver copies of complex analytical discussions to the authors and session secretaries for publication and published answers.

REPORT OF THE CHAIRMAN OF THE IFAC TECHNICAL COMMITTEE ON COMPONENTS, MR. G. BOROMISZA (HUNGARY)

Activities

P r e p a r a t i o n o f t h e B a s l e C o n g r e s s

The Committee Chairman assisted by membership has organized the paper review for the IFAC Basle Congress 1963. Ten Committee members have prepared 15 paper reviews from among the 34 papers presented.

S c i e n t i f i c a c t i v i t i e s

The Committee Meeting in Paris 1962 discussed the "Tentative List of Data Characterizing a Component" prepared by the Chairman with the assistance in form of comments made by membership. It was decided to accept this list as a basis for further work. A sub-committee headed by Professor S o t s k o v (USSR) was set up to continue this work by completing the list and giving appropriate definitions for data. This work is going on.

Eight members of the Committee participated in the Paris meeting and discussed the items of the agenda. It was agreed to organize symposia in connection with topics of the different sub-committees, with 3 or 4 invited lecturers and free disputes, in either of the following subjects:

pneumatic signal generation and transmission
pneumatic amplifiers and sensors
techniques and scientific means of measuring characteristics of components
transmission of measuring signals by non-electric means
human operator.

The first symposium could be connected with the IMEKO 1964 Stockholm Conference. The Committee will take part in the Section "Border questions between measuring and automation".

REPORT OF THE CHAIRMAN OF THE IFAC TECHNICAL COMMITTEE ON BIBLIOGRAPHY, MR. M. AJNBINDER (BELGIUM)

The IFAC Bibliography appears in a regular way, and so far 4 issues have been printed and distributed.

These 4 issues contain 3,912 references, of which

24 % are due to the cooperation of IFAC organizations
76 % are tue to the personal work of the Editor and his staff.

As far as cooperation is concerned, it is definitely necessary to stress the importance of regular sending of bibliographical material to the Chairman in two copies. Some countries do so regularly, but others either send nothing at all, or send only one copy to the Editor, by-passing the Chairman. Sometimes, the

material is being sent only once or twice in a year, which makes the regular printing of the Bibliography very difficult.

Classification: The IFAC Classification has been widely accepted and is being continuously used by member organizations. Some modifications have been proposed by various specialized organizations, such as e.g. European Federation of Chemical Engineering. These were accepted in part, as far as it was practically possible. Other proposed modifications will be introduced with the time, however, for the time being we feel that it is preferable to limit the scope of these modifications to the barest minimum, so as not to upset the regular work,

In conclusion, it can be said, that this first practical venture of IFAC is progressing, but a better cooperation is urgently needed.

Past Bibliography

The IFAC Bibliography Committee is under an obligation towards UNESCO to start the publication of a Bibliography concerning the period before the Current Bibliography has started. It was first contemplated to publish issues encompassing each several years backwards. However, at closer examination such a method appears not to be practical. The nearest years contain a considerable amount of material, which is gradually diminishing as we regress. Therefore it is proposed to publish issues containing the same amount of references, without consideration for strict chronological divisions. We will probably maintain 4,000 references per issue, this being the scope of work which the limited material means and time available will allow for.

The collected material should be classified, and sent to the Chairman, who will establish with the Editor the best way of processing and of printing.

REPORT OF THE CHAIRMAN OF THE IFAC TECHNICAL COMMITTEE ON EDUCATION, MR. M. PELEGRIN (FRANCE)

Committee members are kindly requested to draft a short report on different types of Automatic Control training existing in their countries.

In order to be in a position to study a basical proposal for the equivalence of degrees, it will be necessary first to well define the different categories of degrees and then to specify, for each of them, the minimum level required.

REPORT OF THE IFAC TECHNICAL COMMITTEE ON TERMINOLOGY

given by the Chairman of the Subcommittee on Definitions, Mr. H.L. M a s o n (USA).

In November 1962, inquiry concerning national contributions to international definitions was addressed to IFAC Terminology Committee members and others. Draft 1(37) (Sec) 280 was issued in April by the French Secretariat for Gp 37 of IEC (International Electrotechnical Commission) on Equipments de Commande et de Régulation Automatique. Prof. J. H o f f m a n n reported progress by the Comité Belge d'Electrotechnique and l'Institut Belge de Régulation et d'Automatisme in preparing the chapters on automation for the third edition of Vocabulaire International Electrotechnique. In Germany a new draft of DIN 19226, Regelungstechnik und Steuerungstechnik, Begriffe und Benennungen, was published. The Hungarian Bureau of Standards has published as Vocabulary No. 19 some 1,000 basic terms of control engineering, in Hungarian, German, English and Russian. In Czechoslovakia the following papers were published: The 1957 UTIA proposal for decimal classification; CSN 01 6928 Digital and Analog Computer Terminology, in Czech, Slovak, Russian, English and German; CSN 10 0170 Terminology of Automation and Control Engineering with 206 terms defined and given Czech, Slovak, Russian, English, French, and German equivalents; publication in Automatizace of Professor Ed. G e r e c k e 's Graphical Symbols; study by UTIA of terminology for logical elements and finite automata; and the 1963 issuance of CSN 10 0171 dealing with magnetic amplifiers. The International Union of Pure and Applied Physics sent S.U.N. 61-44, Symbols, Units and Nomenclature in Physics, covering recommended forms and typography for nine tapes of physical quantities, six areas of mathematics, and six systems of units.

IEC Vocabulary Publ. 50, Gp 62, Waveguides, includes 152 terms covering fundamentals, coupling and mode-changing devices, adjusting and measuring devices, aerials. Equivalents are given in French, English, German, Spanish, Italian, Dutch, Polish, and Swedish.

In the International Organization for Standardization, ISO/TC 97 on Computers and Information Processing met in October 1962. It agreed to circulate to its members, and to CCITT, ECMA, and UIC, a draft proposal on 6-and 7-bit character codes for graphic symbols and machine controls in information processing interchange, as a guide on signalling speeds for data transmission covering 600, 1,200, 1,800, 2,000, 2,400, and 3,000 bauds. Working Group E was set up to survey the area of problem definition and analysis, including flow chart symbols. A Joint Steering Committee from IEC/53, ISO/95, and ISO/97 has allocated to three joint working groups the administrative

responsibility for magnetic tape, for perforated taps, and for punched cards. A survey on programming language (ALGOL, COBOL, FORTRAN) is to be published. A task group from the International Federation for Information Processing and the International Computation Center, with G.K. T o o t i l l as Chairman, is developing in English and French a systematic vocabulary of terms and definitions.

ISO Publication R31 Part XI-1961 provides revised mathematical signs and symbols for use in the physical sciences and technology.

ISO Memento 1962 provides an encyclopedic source for international recommendations already approved, draft recommendations and standards work under way through the work of 104 technical committees.

ISO Publications Standard R215, Nov. 1961, contains recommendations for headings; synopses and translation; notes; bibliographic references; tables and illustrations; symbols; abbreviations and units; instalments and series; pagination; classification mark; and date.

WORLDWIDE AUTOMATIC CONTROL

International Events

THE FOURTH INTERNATIONAL ANALOGUE COMPUTATION MEETINGS 1964

The Fourth International Analogue Computation Meetings will be held during the week commencing the 14th September 1964, at Brighton, United Kingdom, under the sponsorship of the British Computer Society and of the International Association for Analogue Computation. The main points of the Meeting will be: The theory and application of Analogue and Hybrid Computation.

The contributors of papers are asked to send in a summary before October 31st, 1963, in their own language with a translation in English or French. The Refereeing Committee will inform the authors within three months's time, whether their paper should be presented.

The complete text of these papers should be sent in to the Refereeing Committee before May 31st, 1964. The latter will, then, decide which of the papers should be presented and discussed during the Conference. The other ones will be published in the Proceedings of the Conference.

The papers so accepted either for presentation or publication will be copied and available to the participants at the beginning of the Conference.

All correspondence relating to the submission of papers should be addressed to:

Professor S.C. R e d s h a w, Vice-President, As.I.C.A.,
Department of Civil Engineering,
The University,
Birmingham 15
England.

IFIP CONGRESS 1962

Isaac L. A u e r b a c h, the representative of the American Federation of Information Processing Societies to IFIP, has been reelected to a second three-year term as president of the International Federation for Information Processing (IFIP).

Dr. A. v a n W i j n g a a r d e n, the representative of the Nederlands Rekenmachine Genootschap, was elected vice-president of IFIP for a two-year term.

Dr. Ambrosius P. S p e i s e r, Profewsor at the Swiss Federal Institute of Technology at Zurich and representative of the Swiss Federation of Automatic Control, was reelected secretary-treasurer for a one-year term.

The elections were held by the council of IFIP during the IFIP Congress 1962 in Munich. The seven-day congress, attended by some 2,800 computer scientists and other information processing specialists from 41 nations, provided an international forum for an exchange of information and ideas on the most significant developments in the information processing field. The Congress consisted of a total of 49 technical sessions and an international exhibition of computer-oriented products. A Proceedings of the Congress will be published in 1963. It will contain the full texts of all invited and submitted papers including discussions and summaries of the Symposia and Panel Sessions.

IFIP CONGRESS 1965

Mr. A u e r b a c h, who presided at the IFIP Congress 1962, will be responsible for directing the organization of the IFIP Congress 1965, to be held in New York City in May, 1965.

Dr. Werner B u c h h o l z has been appointed chairman of the IFIP Congress 1965. He is a member of the Board of Governors of the American Federation of Information Processing Societies (AFIPS), which will be the host technical society to the congress.

Mr. B. L a n g e f o r s of Linköping, Sweden, will be chairman of the Program Committee and Dr. Alston H o u s e h o l d e r of the Oak Ridge National Laboratory in Oak Ridge, Tennessee, USA, will be as vice-chairman of the Program Committee for the IFIP Congress 1965.

The Program Committee will consist of area chairmen, subject specialists, and the members of the IFIP council to ensure the international character of the congress.

The IFIP Congress 1965 will be the first international conference on information processing to be held in the United States. IFIP, the sponsoring organization, now represents 20 national technical societies from Argentina, Australia, Belgium, Canada, Czechoslovakia, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Poland, Spain, Sweden, Switzerland, the United Kingdom, the United States, and the USSR.

Austria

The ÖAA (Österreichischer Arbeitsausschuß für Automatisierung - Austrian Working Committee on Automation) has organized the following lectures and courses:

November 8, 1962 "Siemens-Selex, a remote- recording system for office and plant automation" by Dr. J. F e r b e r, Vienna.

December 6, 1962 film display on "Automated machines".

January 17, 1963 "Steam generator automatic control" by Dipl.-Ing. H. V o s s, Berlin.

February 28, 1963 "Application of semi-conductors to control problems in high-current techniques" by Prof. Dr.-Ing. R. L a p p e, Dresden.

October 16, 18 and 23, 1962, a course on "Logic algebra and thinking machines" by Dr. J. R o p p e r t.

November 20 and 22, 1962, a course on "Digital measurements" by Dipl.-Ing. T. N o v a c e k and Dipl.-Ing. H. H ö r n e r.

January 29 and 30, 1963, a seminar on "Machine-tool digital control" with 10 lectures and discussions.

February 19, 21 and 26, 1963, a course on "Construction problems in electronic computer plants" by Dr. J. R ö s e l and Dr. P. K l e m e n t.

Belgium

The I.B.R.A. (Institut Belge de Régulation et d'Automatisme - Belgian Institute of Automatic Control) has organized the 4 following series of lectures:

1. Computers and process optimizing

November 19, 1962 - Introduction and preliminary discussions.
December 17, 1962 - The "model" concept.
January 21, 1963 - Process optimizing in oil refineries.
February 18, 1963 - "Servomechanisms using a computer" by Mr. G o d f r i n d.
March 25, 1963 - Vocabulary problems for computer users.
April 22, 1963 - Management optimizing problems.
May 20, 1963 - "Examples of computer applications in metallurgy" by C. H u b a u t.
June 17, 1963 - Conclusions of the session.

2. Industrial control

December 17, 1962 - "Analog and logic mixed control of industrial processes" by R. P e r e t z.
January 21, 1963 - "Logic aspect of some optimal automatic control laws" by J. C h a r l e s.
February 25, 1963 - "Optimal research of logic functions" by J. F l o r i n e.
March 25, 1963 - "Logic functions in rolling mill automatic control" by P. W i l l e m s.
April 29, 1963 - "Some examples of chemical process mathematical models" by R. J o t t r a n d.
May 20, 1963 - "Digital control of a cement production furnace" by A. H e r r e n t.

3. Seminar on sensors

February 26, 1963 - "The role of the sensor in the control loop. The influence of pneumatic transmissions" by M. A j n b i n d e r
March 12, 1963 - "Pressure and differential-pressure sensors. Part 1" by E. B u c h e t
March 26, 1963 - "Pressure and differential-pressure sensors. Part 2" by E. B u c h e t
April 10, 1963 - "Temperature sensors" by J. F a f c h a m p s.
April 22, 1963 - "Electro-pneumatic sensors of mechanical motion" by R. M o l l e.
May 6, 1963 - "Electro-chemical sensors. pH measurement" by Mr. N a v e a u.

4. Sequence controls

November 23, 1962 - "The application of sequence controls to hydro-electric power station control. The example of the Vianden pumping power storage station" by A. K a z i m i r o w s k i and D. G r e i n d l.
February 21, 1963 - "Tele-operation systems principle compared with data transmission systems" by B. M a t t l e t.

France

C.N.A. (Centre National de l'Automatisation)

Under the general heading "Production automation by the use of electronic computers", the C.N.A. (Centre National de l' Automatisation - National Automation Center) has organized in Paris the following cycle of lectures opened by the President of the C.N.A., Mr. L é a u t é, member of the Academy of Sciences:

March 20, 1963 - "Relations between the user and the manufacturer in the design of a computer automation" by Mr. K a l l m a n n.
March 26, 1963 - "Design of a large modern unit control" by Mr. L e b e l.
"Optimizing a process by means of a reversible analog computer" by Mr. H o n o r é.
April 3, 1963 - Machine-tool digital control" by Mr. A u r i c o s t e.
April 24, 1963 - "Application of computers to a mass production machine. Aim assigned and operational results" by Mr. G e o r g e s and Mr. C s e c h.
May 8, 1963 - "Computer simulation of a chemical unit" by Mr. V a l l e t.
May 15, 1963 - "Optimizing a catalytic cracking unit by means of an industrial computer" by Mr. L e r m o y e z.
May 22, 1963 - "Centralized ethylen production control" by M. C r i c o.

Institut Supérieur des Matériaux et de la Construction Mécanique

Under the general heading

"Pneumatic automatic control components",

the Institut Supérieur des Matériaux et de la Construction Mécanique (Institute of Materials and Machine-Building) organized in Paris a full-day seminar on May 13, 1963, opened by General P. N i c o l a u, Director of Industrial Mechanics Study Cycles of this Institute, with the following lectures:

- "Sensors" by C. R e n e t.
- "Logic Elements" by S. T h e i l l i e z.
- "From pneumatic transducers to industrial process optimizing" by Professor R. M o l l e (Belgium).
- "Pneumatic transferometer: its realization and applications" by C. S o u r i s s e.
- "Controllers" by J. B o u c h o n.
- "Functional design of some controllers" by H.P. C h a b r i e r and J.P. C a n a r d.
- "Motors" by J. D u p u i s.
- "Pneumatic transmission elements in a locomotive remote control" by Mr. L a p l a i c h e.

Automatic Control in Steel Industry

A full-day seminar on automatic control in the steel industry, organized by the Association Technique de la Sidérurgie Française (French Technical Association of steel-making) and presided by Mr. M. A l l a r d, Director General of I.R.S.I.D. (Institut de Recherches de la Sidérurgie - Institute of Steel-making Research) took place in Paris on April 25, 1963.

Symposium on the use of cybernetics in Railways

The International Railway Union is organizing in Paris a 8 to 9 days Symposium starting on November 4, 1963 under the general chairmanship of Mr. Louis A r m a n d and devoted to the use of cybernetics on railways. 5 sections will be respectively devoted to:

- Automation of general problems concerning railway operation.
- Automation of autonomous system operation.
- Application of electronics units to management problems.
- Mathematical methods and operations research applicable to the solution of transportation problems by means of electronic computers.
- Technical means of data processing and transmission and organization of computing centres.

The official language of the symposium will be French, English, Russian and German with simultaneous translation into these languages. All particulars can be obtained from:

Union Internationale des Chemins de Fer

14-16 rue Jean Rey

P a r i s 15e

India

A three-days Conference on Automation and Computation was held on February 22-24, 1963 at the Bihar Institute of Technology at Dhanbad (Bihar).

There were four technical sessions on

- (a) Theory of Control Systems.
- (b) Computation Techniques.
- (c) Applications.
- (d) Components.

Altogether nineteen papers were presented including a brief report of the paper by Dr. Tribhuan P r a s a d and V.P. S i n h a, which has been accepted for presentation at the Second Congress of IFAC at Basle. In addition, there was a general session devoted to a discussion on the educational aspects of Control Engineering and Computation and it was unanimously agreed that the courses in Automation and Computation being offered at various Institutions in the country did not satisfy the requirements in so far as they were too sketchy and a "block-course" was not available. It was also unanimously decided to approach the Government at various levels, the Institutions and the Industries of the country to set up Workshops for Automation and Computation in all parts of the country where short-term courses would be available for those who are interested and volunteer to receive such training. The Government or Institutions would be requested to release qualified personnel for imparting such training at these centres.

The following papers and reports were read and discussed:

1. Root-Locus Breaking and Breakaway Points by M.M. G u p t a, University of Roorkee, Roorkee.
2. Minimum Time Control problem by A.K. C h o u d h a r y, Regional Engineering College, Durgapur.
3. Stability Control for linear Discrete System by M. S i n h a, Bihar Institute of Technology.
4. Phase utilization Characterisiics of Resistance Capacitance Equilizers in servo-mechanisms by Dr. H. B a n e r j e e, Birla Institute of Technology, Mesra, Ranchi.
5. Describing Function Technique of Analysing Non-Linear Control Systems by B.P. S i n h a, Bihar Institute of Technology.
6. The use of Standard Tables for attenuation-phase plots of Linear Systems by Dr. Sushil Das G u p t a, Jadavpur University, Calcutta.
7. An aspect of Bang-Bang Control Problem by N.K. G u p t a and B.P. B h a t t a c h a r y y a, Bengal Engineering College Howrah.
8. Analogue Computation in Nuclear Engineering by J. R a n g n a t h, Atomic Energy Establishment, Tromby, Bombay.
9. On Solution of Third order differential equations with one operational amplifier by L.K. W a d h w a , Defence Research and development organization, New Delhi.
10. Computers and Control Engineering by D. Dutta M a j u m d a r, Indian Statistical Institute, Calcutta.
11. Transformer Analogue Fourier Analyser by Dr. P.V. R a o, Professor, Indian Institute of Technology, Madras.
12. Transistor Operational Amplifier for analogue Computers by R. S u n d e r, Radar Division, Lrde, Bangalore.
13. Some aspects of magnetic drum computers by D. Dutta M a j u m d a r, Indian Statistical Institute, Calcutta.

14. Automatic Governing of Hydraulic Turbines by Dr. V.P. V a s a n d i, Professor of Mechanical Engineering, Bihar Institute of Technology.
15. Some aspects of Automatic Control of Absorption Towers by D. V i s w a n a t h a m, D. V e n k a t a r a m a n, Indian Institute of Technology, Bombay.
16. On Simulation of Fourth Order Systems with one Operational Amplifier by L.K. W a d h w a, Defence Research and Development organization, New Delhi.
17. Summary of a digital procedure for the study of Non-linear systems for Random Processes by Dr. T. P r a - s a d and V.P. S i n h a, Bihar Institute of Technology.
18. Some aspects of Control Engineering Education by Dr. A.K. C h a t t e r j e e and Prof. B.S. R a o, Birla Institute of Technology, Mesra, Ranchi.
19. A report on the education in Automatic Control and Computation in India as existing at the present by Dr. S.N. S i n h a, Bihar Institute of Technology.

Japan

Society of Instrument and Control Engineers

The first academic lecture meeting of this Society was held on October 16-18, 1962 in Tokyo. Some 160 research papers were presented and lively discussion was exchanged among the many attendants.

5th National Congress of Automatic Control

This Congress, co-sponsored by eleven associated societies, was held in Osaka on November 19-22, 1962, with sessions on theory, components and applications.

Visit of USSR scientists

A group of USSR scientists visited Japan in October 1962. They were invited by the Scientific Council of Japan for touring through Japanese Universities, Laboratories and factories for about a month, and exchanged views with Japanese specialists in their field. Their lectures on automatic control in USSR were given in various parts of the country. The members of the group were Messrs. V.A. T r a p e z n i k o v, A.P. S h o t o v, B.N. N a u m o v, O.I. A v e n and M.G. G a l k i n.

Annual All-Japan Industrial Instrument Show

This show was held on November 17-20, 1962 in Osaka. In the show rooms, many new automation mechanisms and instruments numbering several thousands, were exhibited by some 80 firms.

Switzerland

Lectures and symposium in Lausanne

The ASSPA (Association Suisse pour l'Automatique - Swiss Association of Automatic Control) has organized, jointly with EPUL (Ecole Polytechnique de l'Université de Lausanne - Lausanne University Polytechnic School) a set of lectures on 1st to 6th April, 1963 on the general topic:

"Automatic control and its methods of calculation"

The following lectures were made:

- "Introduction and description of problems which have to be solved in the Automatic Control field" by Prof. D. G a - d e n.

a) Linear systems

- "Description of a practical example of a control system S and formation of the equation of an element E of this system" by Prof. L. B o r e l.
- "Basical mathematics, frequency and transient response of element E" by Prof. Ch. B l a n c.
- "Analog computation and application to element E" by Prof. R. D e s s o u l a v y.
- "Digital computation and application to element E" by Prof. Ch. B l a n c.
- "Demonstration on an analog computer and on a digital computer of the behaviour of element E" by Professors Ch. B l a n c and R. D e s s o u l a v y.
- "Impulse analysis and application to element E" by Dr. M. C u é n o d.
- "Complementary description of control system S" by Prof. L. B o r e l.
- "Transient response and stability of system S" by A. R o c h.
- "Demonstration on an analog computer and on a digital computer of the behaviour of system S" by Professors Ch. B l a n c and R. D e s s o u l a v y.
- "Control accuracy of system S" by Dr. M. C u é n o d .

b) Non-linear systems

- "The non-linearities of system S" by A. R o c h.
- "Phase-plane method transient solution" by B. K e l l e r.
- "Classical resolving methods: 1st harmonic, frequency and amplitude diagrams, stability" by A. R o c h .
- "Analytical methods, stability theory, applications" by B. K e l l e r.

c) Advanced Automatic Control methods

- "Sampled-data systems: characterisation, stability and compensation" by Dr. L. P u n.
- "Industrial process and automatic computer control criteria" by P.A. B o b i l l i e r.
- "Self-adaptive and optimizing systems, concepts, problems and general methods" by Dr. L. P u n.
- "Industrial process control by means of analog, digital and hybrid computers" by P.A. B o b i l l i e r.

This set of lectures - intended for industrial engineers and advanced technicians as well as for students of EPUL and aiming to inform them on modern methods of calculation applicable in practice - had the originality of being centered on the same practical example, taken from current industrial practice.

The date of April 5, 1963, left free by this set of lectures was used for a symposium on the topic:

"Determination of the numerical parameters concerning hydroelectric power station control"

led by Prof. G. H u t a r e w (Germany).

Lectures and seminars in Geneva

The Geneva section of ASSPA has organized, with the assistance of P.A. B o b i l l i e r, Dr. M. C u é n o d, J.P. I m h o f, G. P i g u e t and Dr. L. P u n, a set of lectures on:

"Automatic adaptation and optimizing"

with the following general programme:

Oct. 1, 1962	- General trends of Automatic control development.
Oct. 8, and 22, 1962	- Principles of automatic adaptation and optimizing (definition, some analytical and experimental optimizing methods).
Nov. 5, and 19, 1962, Dec. 3, and 17, 1962	- Application of the numerical analysis in extremalisation problems (position of numerical analysis, some types of problems studied, solution of algebraic linear equation systems by the Crout-Cholesky and the Gauss-Seidel methods).
Jan. 7, and 21, Febr. 4, and 18, 1963	- Application of digital means in extremalisation problems (constitution and operating principles of modern electronic computers and processing of a problem, programming languages, examples of FORTRAN programming).
March 4, 18 and 25, 1963	- Examples of automatic adaptation and optimizing applications (application to the electric network control, classical electric network control methods, basic data of the economical electric network dispatching, principle of the electric network control optimizing method, investigation on a mathematical model of the benefit of optimizing an electric network).

The two following public lectures completed this set of 14 lectures:

Febr. 25, 1963	- "An example of otpimizing an industrial process" by M. L e r m o y e z, Paris.
April 1, 1963	- "An example of optimizing electric power production" by J. C a r p e n t i e r, Paris.

The two following seminars followed these lectures and completed them:

a) Seminar on means for increasing productivity of small and average firms (April 16-19, 1963)

with the following lectures:

- "Why small and average sized firms have an interest if not an obligation of being automated?" by Mr. M o t t u.
- "Basic and elementary organisation required from a workshop or a firm before being automated. Necessity to be able to calculate costs and to know the machines in all their details (production, capacity)" by Mr. C h a l v e t, Paris.
- "Investigation of the product in connection with the requirements of automation" by Mr. C h a l v e t, Paris.
- "Selection of an automation system from the possibilities provided in the pneumatic, hydraulic, mechanical and electronic fields" by Mr. B a r b i e r.
- "Logic magnetic elements. Applied electronics in industry" by Mr. F a y e t.
- "Transistorized logic elements. Theory applications, some realizations" by a manufacturer.
- "Various electrical and electronic equipments, relays, control and measurement panels" by a manufacturer.
- "Hydraulic and pneumatic standardizations, the advantages of using them, discussion of the scheme" by L.J. P e r r i n.
- "Modular pneumatic equipment" by L.J. P e r r i n.
- "Modular hydraulic equipment" by Mr. O o m p e r. Paris.
- "Machine-tool programmers, punched-tape, punched card and other programmers" by a manufacturer.
- "Adaptation of different systems to automatic lathes in order to increase their productivity" by a manufacturer.

b) Seminar on graph theory and dynamic programming (May 13-14, 1963) lead by A. K a u f m a n and M. F a u r e

with the following programme:

b 1) Graph theory
- Graph theory as a part of the theory of groups.
- Planning problems.
- Flow problems.
- Investigation of classification.
- Optimal paths, series, circuits and cycles.
- Location problem.
- Tree distribution problems.
- Examples.

b 2) Dynamic programming

- Optimality theorem.
- Deterministic programmes.
- Research of the optimal policy.
- Probabilistic programmes.
- Markov's series and processes.
- D.H. and H.D. processes.
- Research af the optimal strategy.
- Semi-simulation.
- Adaptive strategy.
- Convergency problems in the stationary case.
- Examples.

Courses in Bienne and Neuchatel

The Jura section of ASSPA has organized during the winter 1962/63, in Bienne and in the Neuchatel mountains, the following courses:

- 10 lectures on modern mathematics by Dr. A. Schneeberger.
- A course on automation (rectifiers, transducers, tube amplifiers, transistors) by M. Gabriel and R. Jeanneret.
- A course on electric controls (control elements and circuits, contactless control) by J. Buser.

United Kingdom

The following meetings and conferences took place in the United Kingdom from January to May 1963:

Institution of Electrical Engineers

Lectures held at Savoy Place, London, W.C. 2.

- 14th Jan. - Modern Transducers with an Electrical Output by J. Thomson (an abstract is available).
- 23rd Jan. - Transductor-Assisted Tap Changing on a 50 c/s Locomotive and Semiconductor Rectifier by T. B. Burnett and G.W. Graham.
- 31st Jan. - Discussion on resistance network Analogue as Aids to Solving the Laplace Equation (an abstract is available).
- 5th March - Analogue Investigation of the Stability of a Graphite Power Reactor by V.R. Sastry and J.W. Lynn.
- 11th March - Hybrid Digital-Analogue Computation, Specialist discussion opened by E. Leighton-Davies.

- 23rd Apr. - Optimization of Multi-Variable Control Systems. Discussion meeting opened by H.H. Rosenbrock and P.H. Hammond.
- 29th Apro. - Symposium on Components and Devices for Computers.
- 2nd May - Half-day discussion meeting on On-line Data Processing for Steel Works.

Institution of Mechanical Engineers

- 21st to 22nd March - Conference on Education and Training of Technicians.
- 26th Apr. - The Automatic Control Group Committee held an Informal Discussion on the subject of "Economics of Automation and Machine Tools". The Board of Trade Journal Supplement "The Economic Factors Underlying the Use of Electronically - Controlled Machine Tools for Contour Milling Operations" was used as the basis of the discussion: copies can be obtained, free of charge, from the Board of Trade. Mr. R. Ratcliffe, Controller, Royal Ordnance Factories, opened the meeting with a brief introduction on the report and was followed by Mr. C.J. Beavor, Assistant Manager of R.O.F., Woolwich, who commented in more detail on its mechanical and production engineering aspects. Mr. E. Walker, Deputy Assistant Director, Ordnance Factories Accounts, commented on the economic considerations.

Institution of Mining Engineers

- 16th Jan. - Paper on "Automation in Coal Preparation Plants" read by Mr. L.W. Needham at a meeting of the Midland Countries Institution of Engineers at the University of Nottingham.

Institute of Petroleum

- 1st May - Meeting entitled "Modern Control and Instrumentation Techniques Applied to Refinery Operations" by S. Wallis.

British Institution of Radio Engineers

- 20th March - London: Symposium on Multi-aperture Ferrite Devices.
  Leicester: Paper on Automatic Marshalling Yards by R.M. Foulkes.

- 26th March - Southampton: The Analogue Computer as a Tool in Engineering Research and Design by A.J. C o l l i n s.
- 27th March - Bristol: Joint Meeting with British Computer Society on "Hybrid Computers".
- 28th March - Birmingham: Jointly with I.E.R. One-day Symposium on Automatic Control.
- 3rd April - London: The Display and Processing of Data from the Harco Navigation System by G.E. R o b e r t s, B. P a r k e r and C. P o w e l l.
- 10th April - London: A Telecommunications and Telecontrol System for a Crude Oil Pipeline by W.T. B r o w n.
- 16th-20th April - Convention on Electronics and Productivity held at the University of Southampton.

Society of Instrument Technology

Lectures 1963 at Manson House, London, W. 1.

- 13th Febr. - The Quality and Quantity of Information by K.F.H. M u r r e l l, The Design of an Instrument Display by J. S p e n c e r. Process Plant Control - Information Centre Concept by A. C o w a n.
- 26th Febr. - Fluid Logic Devices & Circuits by Dr. A.E. M i t c h e l l, H.H. G l a e t t l i and H.R. M u e l l e r.
- 13th March - The Application of Computers as a Control Aid in the Development of Hovercraft by J. S t a f f o r d.
- 26th March - Principles of Measurement by L. P i n k e l s t e i n.
- 10th April - The Use of Queuing Theory by Dr. G.A. G a r r e a u.
- 30th April - Exposition "The Relative Merits of Electric, Pneumatic and Hydraulic Actuators for a Given Application".

Conference on Education and Training for Automation and Computation

Under the sponsorship of BCAC, the Institution of Mechanical Engineers organised this Conference at Cranfield on 27th - 29th March, 1963, with the co-operation of the authorities of the College of Aeronautics.

The programme of this Conference was the following:

- The Demands made by Automation on Managers and Professional Staff by L. Landon G o o d m a n.
- The Effects of Automation on Man and his Job by J. C o o p e r.

- The Changes of Skill required of Managers and how they can be obtained by A.R. C o o p e r.
- The Changes of Skill required of Technicians and Craftsmen and how they can be obtained by B. S c o t t.
- The Changes of Skill required of professional Accountants, Civil Servants and Clerical Workers and how they can be obtained"by C.W. B a n y a r d.

S e s s i o n 1

In what way are the needs for education and training being changed by progress in automation and computation?

The identification of some typical tasks which exist in 1963 but which did not exist in 1953, and some predictions for 1968.

The identification of some typical tasks which existed in 1953 but which no longer exist in 1963, and some predictions for relation to 1968.

To what extent are current methods of education and training deficient in relation to current tasks, and how much more will they be in relation to future tasks?

In what way is progress in automation being slowed down by a shortage of appropriately qualified manpower?

What steps should be taken to achieve the more rapid application in relation to education and training, of the results of research and technical development?

Should further education and re-training courses be re-organised to provide a better service for business and industry?

Are any new kinds of organisation necessary to keep changing needs and their satisfaction under review?

What can be learned from other countries?

S e s s i o n 2

In what way can the needs for education and training be best satisfied?

Are the contents of present courses unbalanced in relation to requirements?

Should efforts be made to attract more students to particular types of course, and if so how?

Are any entirely new types of course necessary?

What is holding back the growth of existing courses designed to meet the needs?

Are any new kinds of qualifying bodies necessary?

What can be learned from other countries?

- The Future of Automation by E.W. E n g s t r o m.

International Telemetering Conference 1963

sponsored by: American Institute of Electrical Engineers, American Rocket Society, Institute of Aerospace Sciences, Institute of Radio Engineers, Instrument Society of America, British Institution of Radio Engineers, Institution of Electrical Engineers.

A Joint American and British Committee are arranging the first International Telemetering Conference, to take place during the week beginning the 23rd September, 1963, at the Institution of Electrical Engineers, Savoy Place, London, W.C. 2, England.

Although this is the First International Conference on the subject of Telemetering, it follows directly a series of annual National Telemetering Conferences held in the United States over the past several years, and is being held in London at the suggestion of the five American sponsoring societies.

The Conference will cover the following aspects of telemetering:

1) Characteristics of the information to be measured.
2) Transducers.
3) Signal conditioning (pre-transmission).
4) Transmitting systems (including coding).
5) Receiving and recording systems.
6) Signal recovery (demodulation).
7) Data reduction, presentation and evaluation (but excluding computers, except as incidental to the fore-going).

Interest is in any combination of the above areas and includes theory, systems design and "hardware" techniques.

Bound preprints of all the papers to be presented will be sent to participants before the Conference, and a second volume containing summaries of the papers and a report of the discussion will be available subsequently.

Exhibits

Arrangements are being made for an Exhibition of Telemetering Equipment to be held in London during the week beginning the 23rd September, 1963, in association with the International Telemetering Conference.

Arrangements for the Exhibition are in the hands of the Joint British and American Organizing Committee for the Conference, and enquiries relating to exhibits should be addressed to the Exhibits Manager for the North American Committee, whose name

and address are:

Mr. F.G. M c G a v o c k ,
McGavock Associates
3820 East Colorado Blvd.,
Pasadena, Calif., USA.

The location of the Exhibition has not yet been settled but will probably be one of London's largest hotels.

In addition, there will be an opportunity for exhibits to be mounted at the Institution of Electrical Engineers during the Conference, particularly of equipment closely related to the papers being presented. Anyone interested in exhibiting in this section should contact the Secretary of the Institution of Electrical Engineers, Savoy Place, London, W.C. 2.

I.E.E. Symposium on Automatic Production

I.E.E. (Institution of Electrical Engineering, Savoy Place, London, W.C. 2) is organizing a:

Symposium on Automatic Production in Electrical and Electronic Engineering - 24th & 25th October, 1963 - (in connection with the National Productivity Year).

It is proposed that the following subjects be included in the Programme of the Symposium:

1. Design of Components for Automatic Assembly.
2. Automatic Functional Testing of Electrical Components and Assemblies.
3. Automatic Production Processes.
4. Automatic Assembly.
5. Automatic Inspection and Testing.
6. Automatic Adjustment.
7. Automatic Production Scheduling.
8. Automatic Storage and Distribution.

The written material for the Symposium will comprise contributions between 1.000 and 1.500 words in length. Copies of all the material included in the programme will be made available to those attending the Symposium.

USA

American Automatic Control Council (A.A.C.C.)

With the merger of the American Institute of Electrical Engineers (A.I.E.E.) and the Institute of Radio Engineers (I.R.E.) into the Institute of Electrical and Electronics Engineers (I.E.E.E.), the number of Constituent Societies of the American Automatic Control Council have been reduced from five to four. The three other Constituents are: American Institute of Chemi-

cal Engineers (A.I.Ch.E.), American Society of Mechanical Engineers (A.S.M.E.), and Instrument Society of America (I.S.A.)

1962 JACC Best Paper Prize

The winners of the 1962 J.A.C.C. best paper prize (these papers were presented at the 1962 Joint Automatic Control Conference) are:

1st Price: "Synthesis of Feedback Controls Using Optimization Theory - An Example", F.J. E l l e r t and C.W. M e r r i a m III.

2nd Price: "An Application of Functional Analyis to the Optimal Control Problem", G.M. K r a n c and P.E. S a r a c h i k.

1963 Joint Automatic Control Conference

The 1963 J.A.C.C. will be held on June 19-21, 1963 at the University of Minnesota, Minneapolis, Minnesota. The conference is sponsored by the American Institute of Chemical Engineers (A.I.Ch.E.).

The General Chairman is Dr. Theodore J. W i l l i a m s; the chairman of the Program Committee is Professor Otis L. U p d i k e (University of Virginia, Charlottesville, Va.).

A special feature of J.A.C.C. this year is the early presentation of 33 of the papers which are scheduled to be given at the Second Congress of the International Federation of Automatic Control at Basle, Switzerland, on August 27 - September 4, 1963. These papers, which include 75 % of the American contributions to the IFAC meeting as well as contributions from four foreign countries are being presented to allow an American audience to hear and discuss them well ahead of the date when the IFAC Proceedings will become available.

Pre-print copies of the papers will be available at the conference in the form of a bound volume. This volume will include the complete text of the 72 papers presented at the conference, plus one-page abstracts of the 33 IFAC papers. Extra copies of the volume of preprints are available for a price of 7.50 Dollars; a postage charge of 1.50 Dollars is necessary for foreign orders. The volume will comprise approximately 1.000 pages and be 8-1/2" x 1" in size.

Inquiries regarding preprints should be addressed to:

Mr. Joel H e n r y
American Institute of Chemical Engineers
345 East 47th Street
New York 17, New York.

THE TECHNICAL PROGRAMME OF THIS CONFERENCE

S e s s i o n I: Optimum Control Theory - I

- When is a linear Control System Optimal? By R.W. K a l m a n, Baltimore, Md.
- Optimum Control of Distributed Parameter Systems. By P.K.C. C h a n g and F. T u n g, San Jose, Calif.
- A Modified Maximum Principle for Optimum Control of a System with Bounded Phase Space Coordinates. By S.S.L. C h a n g, New York University, New York, N.Y.
- Optimal Control of Systems with Multi-Norm Constraints. By Philip E. S a r a c h i k and G.M. K r a n c, Columbia University, New York, N.Y.
- A Successive Approximation Method for Solving Two-Point Boundary Value Problems Arising in Control Theory. By J.D. P e a r s o n, University of London, London, England.

S e s s i o n II: Functional Organization of Control Computers - Workshop

S e s s i o n III: Actuators, Special Analog Controllers and Automatic Testing

- New Servovalves for Redundant Electrohydraulic Control. By K.D. G a r n j o s t and W.J. T h a y e r, East Aurora, N.Y.
- Statistical Analysis for Novel Fluid Flow Control System. By R.C. B o o t o n, Jr., Redondo Beach, Calif., and W.E. S o l l e c i t o, Syracuse, New York.
- Design Analysis of an Automotive Speed Control System. By W.H. H o l l, Flint, Michigan.
- An Electro-Hydraulic Control System for Reheat Turbines. By M.A. E g g e n b e r g e r, Schenectady, N.Y., and P.H. T r o u t m a n, Harvard Business School, Cambridge, Mass.
- Automatic Testing of Wiring for Circuit Card Panels. By F.T. A r n o l d, Endicott, New York.

S e s s i o n IV: Self Optimizing and Adaptive Control Theory - I

- Automatic Optimizing of a Poorly Defined Process, Part II. By H. C h e s t n u t, R.R. D u e r s c h, and G.J. H a h n, Schenectady, N.Y.
- A new Method of Locating the Maximum Point of an Arbitrary Multipeak Curve in the Presence of Noise. By H.J. K u s h n e r, M.I.T., Cambridge, Mass.

- Adaptive Optimal Control of Nonlinear Processes. By A.E. Pearson, Columbia University, New York, N.Y.
- General Stability Analysis of Sinusoidal Perturbation Extrema-Searching Adaptive Systems. By V.W. Eveleigh, Syracuse, N.Y.

Session V: Optimum Control Theory - II

- Theory of Minimum Time Discrete Regulators. By C. Desoer, University of California, Berkeley, Calif.
- Optimum Control of Discrete-Time Dynamic Processes. By B. Friedland, Little Falls, New Jersey.
- A Solution to the Sampled Minimum-Time Problem. By R.W. Koepcke, San Jose, Calif.
- Optimal Bang-Bang Control with Quadratic Performance Index. By W.M. Wonham, Baltimore, Md., and C.D. Johnson, Purdue University, Lafayette, Indiana.
- On Optimal Control of Self-Adjoint Systems. By M. Athans, P.L. Falb, and R.T. Lacoss, Lincoln Laboratory, M.I.T., Cambridge, Mass.

Session VI: Process Control and Systems

- Optimal Control of Thermal-Hydro System Operation. By L.K. Kirchmayer and R.J. Ringlee, Schenectady, N.Y.
- Compensated Viscosity Measurement by Special Purpose Analog Computer. By J.E. Grader, Rochester, N.Y.
- Approximate Models for Distributed-Parameter Heat Transfer Systems. By S.J. Hall, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
- Approximation Models for the Dynamic Response of Large Distillation Columns. By J.S. Moczek, R.E. Otto, and Th.J. Williams, St. Louis, Missouri.
- Automatic Control of Distillation Columns to Achieve Optimum Operation. By D.E. Lupfer and M.L. Johnson, Barltesville, Oklahoma.

Session VII: Analog and Digital Techniques and Devices

- Ceramic Memories in Extreme Environments. By A.B. Kaufman, Woodland Hills, Calif.
- Automatic Digital Setup and Scaling of Analog Computers. By H.M. Paynter and J. Suez, M.I.T., Cambridge, Mass.

- Rieman-Surfaced Potential Analog for Control Systems Containing Distributed-Lag Elements. By D.A. Pierre, Montana State College, Bozeman, Montana, and Th.J. Higgins, University of Wisconsin, Madison, Wisconsin.
- Theory and Application of the Pole-Zero Analogue Computer. By R.A. Johnson, University of Manitoba, Winnipeg, Manitoba, Canada.
- Process-Oriented Language Compilers. By M.E. Brocks, Canoga Park, Calif.

Session VIII: Self Optimizing and Adaptive Control Theory - II

- A Solution of the Identification Problem. By J.K. Lubbock, and H.A. Barker, University of Cambridge, Cambridge, England.
- Transfer Function Tracking of a Linear Time Varying System by Means of Auxiliary Simple Lag Network. By N.N. Puri and C.N. Weygandt, Moore School of Electrical Engineering, University of Pennsylvania, Philadelphia, Pa.
- An Adaptive-Predictive Model for Nonlinear Processes with Two-Level Inputs. By Rob Roy, R.W. Miller, and P.M. DeRusso, Rensselaer Polytechnic Institute, Troy, N.Y.
- Optimized Feedback Control of Dead Time Plants by Complementary Feedback. By W. Giloi, Konstanz, Germany.
- Dominate Operators Approach to the Theory of Adaptive Control Systems. By A. Straszak, Institute of Automatic Control, Polish Academy of Sciences, Warsaw, Poland.

Session IX: Optimum Control Applications

- Optimal Control of Second-Order Systems. By D.J. Maxwell, Baltimore, Md.
- Optimum and Quasi-Optimum Control of Third- and Fourth-Order Systems. By I. Flügge-Lotz, and H.A. Titus, Jr., Stanford University, Palo Alto, Calif.
- Minimum Fuel Control of Second-Order Systems with Real Poles. By M. Athans, Lincoln Laboratory, M.I.T., Lexington, Mass.
- Minimum Fuel Control of a Second-Order Linear Process with a Constraint on Time-to-Run. By H.O. Ladd and B. Friedland, Little Falls, New Jersey.
- The Control of Two-Variable, On-Off Systems. By. A.J. Adey, J.F. Coales, and J.A. Stiles, Cambridge University, Cambridge, England.

Session X: Metal Working and Continuous Sheet Process Control

- On-Line Computer Control of a Hot Strip Finishing Mill for Steel. By R.G. Beadle, Schenectady, N.Y.
- Techniques for Real Time Determination of the Components of Variance for Control of Continuous Sheet Processes. By A.B. Bishop, Ohio State University, Columbus, Ohio.
- Dynamic Control of Continuous Strip Processes, By. D.A. Wismer, Canoga Park, Calif., and I. Lefkowitz, Case Institute of Technology, Cleveland, Ohio.
- Adaptive Controller for a Metal Cutting Process. By R.M. Centner and J.M. Idelsohn, Detroit, Michigan.

Session XI: Workshop on Stochastic Processes - I

- Classical Problems in Stochastic Processes. By. A.A. Wolf, Silver Springs, Md.
- Comparison of Certain Probability Theory Concepts. By R.S. Berkowitz, University of Pennsylvania, Philadelphia, P.A.
- The Representation of Stochastic Processes by Orthogonal Expansions. By J.B. Thomas, Princeton University, Princeton, N.J.

Session XII: Applications to System Dynamics

- Precise Power Control Utilizing a New Actuator Concept Embodying All-Mechanical Power Flow. By J.L. Harned, K.M. Miller, E. Szlaga, and R. Sudhindranath, Warren, Michigan.
- Phase and Amplitude Sinusoidal Dither Adaptive System. R.K. Smyth, Downey, Calif., and N.E. Nahi, University of Southern California, Los Angeles, Calif.
- Servo Problems and Techniques in Large Antennas. By D.V. Stallard, Bedford, Mass.
- Hydraulic Line Dynamics. By R. Oldenburger and R.E. Goodson, Purdue University, Lafayette, Indiana.
- Fluid-Filled Conduit Frequency Response Charts. By G.L. Esterson, Washington University, St. Louis, Missouri.

Session XIII: Nonlinear and Time Varying Systems Theory

- Quasi-Linearization Design of Nonlinear Feedback Control Systems. By Kan Chen, Pittsburgh, Pa.
- The Analysis of Systems with Periodically Time-Varying Parameters. By Gerhardt Schweizer, Technische Hochschule, Stuttgart, Germany.

- On the Approximate Determination of Periodic Regimes in Systems Containing Relay Elements with Dead Zones. By B.A. Fleishman, Rensselaer Polytechnic Institute, Troy, New York.
- Analysis of Piece-Wise Linear Systems by the Method of Integral Equations. By C.N. Shen, and Huber Wang, Rensselaer Polytechnic Institute, Troy, New York.
- Volterra Series Representation of Time Varying Non-linear Systems. By R.H. Flake, Washington University, St. Louis, Missouri.

Session XIV: Modulated Systems Studies

- A Determinatic Study of Delta Modulation. Ch. A. Halijak, Kansas State University, Manhattan, Kansas, and J.S. Tripp, NASA Langley Research Center, Langley Field, Virginia.
- Integral Pulse Frequency Modulated Control Systems. By C.C. Li, University of Pittsburgh, Pittsburgh, Pa., and R.W. Jones, Northwestern University, Evanston, Ill.
- A Method for the Design of Phase-Lead Demodulation Compensators for Use in Carrier Control Systems. A. Knox, and G.J. Murphy, Northwestern University, Evanston, Ill.
- Pulse Phase-Look Loops. By E.G. Holzmann, Syracuse, New York.

Session XV: Aerospace Components

- Problems of Instrumentation and Control for Nuclear Rockets. By P.E. Brown, Camden, New Jersey.
- A Counter Balance System for Dynamic Testing of Equipment Designed to Operate in a Zero-G Field. By J.C. Nicklas, Jet Propulsion Laboratory, California Inst. of Technology, Pasadena, Calif.
- Gas Supported Dual Element Gyroscope for Space Use. By G.B. Speen, ITT Federal Laboratories, San Fernando, Calif.
- A Rotary-Drive, Vibratory-Output Gyroscopic Instrument. By G.C. Newton, Jr., M.I.T., Cambridge, Mass.
- High Capacity Reaction-Wheel Attitude Control. By M.L. Dertouzos and J.K. Roberge, M.I.T., Cambridge, Mass.

Session XVI: Workshop on Stochastic Processes - II

- The Function Spade Point of View in Time Series Analysis. By E. Parzen, Stanford University, Palo Alto, Calif.

- Regression Analysis and Its Application to the System Identification Problem. By D.W.C. S h e n, and A.E. R o s e n b e r g, University of Pennsylvania, Philadelphia, Pa.
- Estimation of a System Pulse Transfer Function in the Presence of Noise. By M.J. L e v i n, Lincoln Laboratory, M.I.T., Cambridge, Mass.
- On Factoring the Spectral Matrix. By. M.C. D a v i s, David Taylor Model Basin, Washington, D.C.

S e s s i o n XVII: New Results in Stability Theory

- Eventual Stability. By J.P. L a S a l l e, Baltimore, Md., and R.J. R a t h, Seattle, Washington.
- A New Proof of the Hurwitz Stability Criterion by the Second Method of Liapunov, with Applications to Optimum Transfer Functions. By P.C. Parks, University of Southampton, Southampton, England.
- On the Roots of a Real Polynomial Inside the Unit Circle and a Stability Criterion for Linear Discrete Systems. By E.I. J u r y, University of California, Berkeley, Calif.
- A New Analytic Stability Criterion for Use with Describing Functions. By N.H. C h o k s y, Applied Physics Laboratory, The Johns Hopkins University, Silver Spring, Md.
- New Methods for Constructing Liapunov Functions for Time-invariant Control Systems. By G.P. S z e g ö, Instituto de Meccanica Applicata del Politecnico, Milano, Italy.

S e s s i o n XVIII: Frequency Response and Analog Methods

- Frequency Domain Analysis of Multivariable and Distributed Parameter Systems. By D.E. L a m b and C.R. S i m p k i n s, University of Delaware, Newark, Delaware.
- The Frequency Response of Distributed Parameter Systems. By W.E. S c h i e s s e r, Lehigh University, Bethlehem, Pa.
- Feed-Forward Control of Over-Determined Systems by Stochastic Approximation. By M.E. T h o m a s and D.J. W i l d e, University of Texas, Austin, Texas.
- The Design of a Combined Feedforward - Feedback Control System. By R.E. B o l l i n g e r and D.E. L a m b, University of Delaware, Newark, Delaware.
- Optimization by Pontryagin's Maximum Principle on the Analog Computer. By E.S. L e e, Bartlesville, Oklahoma.

S e s s i o n XIX: Guidance and Control Techniques

- Digital Implementation of Time Optimal Attitude Control. By A.H. S e p a h b e n and G. P o d r a z a, Baltimore, Md.

- Optimum Rendezvous Strategies. By P.A. M e s c h l e r, Columbia University, New York, N.Y.
- The Dynamic Analysis and Simulation of Management Control Functions. By. R.B. W i l c o x, Bedford, Mass.
- An Optimum Bistable Controller for Increased Missile Autopilot Performance. By D.A. G i e s e k i n g, University of Illinois, Urbana, Illinois.
- On Minimal Fuel Satellite Attitude Controls. By. J.S. M e d i t c h, El Segundo, Calif.

S e s s i o n XX: Multivariable Control Theory

- Multivariable Controller Design by Signal-Flow Graph Techniques. By R.A. M a t h i a s, Pittsburgh, Pa.
- Eigenvalue Functions of an Interacting Dual-Loop Control System of a Process of V-Canonical Structure. By R. S t a r k e r m a n n, Baden, Switzerland.
- Dual Input Systems with a Saturation Constraint. By. R.S. G a y l o r d, El Segundo, Calif.
- Linear Digital Control. By F.J. M u l l i n, Washington, D.C., and J. de B a r b e y r a c, California Institute of Technology, Pasadena, Calif.

S e s s i o n XXI: Designing for Stability

- Design Via Lyapunov's Second Method, By. L.F. G r a y s o n, Johns Hopkins University, Baltimore, Md.
- Relative Stability Via the Direct Method of Lyapunov. By W.G. V o g t, University of Pittsburgh, Pittsburgh, Pa.
- The Use of the Technique of Linear Bounds for Applying the Direct Method of Liapunov to a Class of Nonlinear and Time-Varying Systems. By R.A. N e s b i t, El Segundo, Calif.
- On the Inverse Describing Function Problem. By J.E. G i b s o n and E.S. d i T a d a, Purdue University, Lafayette, Ind.

S e s s i o n XXII: Modeling and Testing

- Discrete Models of the Human Operator in a Control System. By G.A. B e k e y, Redondo Beach, Alif .
- A Sampled Data Model for Eye Tracking Movements. By L.R. Y o u n g, M.I.T., Cambridge, Mass.
- Experimental Determination of System Dynamics by Pulse Methods. By G.L. D r e i f k e, St. Louis University, St. Louis, Missouri, and Joel O. H o u g e n, St. Louis, Miss.

- Analog Simulation of Distributed Parameter Systems. By Ki Choong H o n g and M.A. L a r s o n, Iowa State University, Ames, Iowa.
- ASA C85 - Terminology for Automatic Control. By D.H. S m i t h, New York, N.Y.

S e s s i o n XXIII: Aerospace Vehicle Dynamics

- Dynamic Model for Fine Pointing Attitude Control of the Orbiting Astronomical Observatory. By R.F. R o b e r s o n, Futterton, Calif.
- Basic Response Relations for Attitude Control Using Gyros. By R.H. C a n n o n, Jr., Stanford University, Palo Alto, Calif.
- Missile Environment Simulation for Rocket Engine Test Facility. By G.J. F i e d l e r and J.J. L a n d y, St. Louis, Missouri.
- Control Design for a Moon Landing Simulator. By Ph.W. D a l r y m p l e, J.F. L e o n a r d, Boston, Mass., and J. W e s l e y B r o o m e, Waltham, Mass.

S e s s i o n XXIV: Temperature Measurement by Thermal Radiation Means - Workshop

S e s s i o n XXV: Stability Studies

- Stability Study of PWM Feedback Systems. By. EII. J u r y, University of California, Berkeley, Calif., and T. N i s h i m a r a, Schenectady, N.Y.
- The Response of Nonlinear Closed-Loop Systems to Random Inputs. By J.E. G i b s o n, and R. S r i d h a r, Purdue University, Lafayette, Indiana.
- Stability Analysis in a Bi-Stable Multiloop System. By I. M a u d e l, Pomona, Calif.
- Stability of Subharmonic Oscillations in Non-Linear Systems. By R. O l d e n b u r g e r and R.E. N i c h o l s, Purdue University, Lafayette, Indiana.

1964 Joint Automatic Control Conference

The 1964 J.A.C.C. will be held at Stanford University, Stanford California. It will be sponsored by the Institute of Electrical and Electronics Engineers (I.E.E.E.). Professor Gene F. F r a n k l i n of Stanford University is the General Chairman, and Professor Lotfi A. Z a d e h (University of California, Berkeley, California) is the chairman of the Program Committee, The paper deadline is November 1963.

1965 Joint Automatic Control Conference

The 1965 J.A.C.C., sponsored by the American Society of Mechanical Engineers (A.S.M.E.), will be held at Rensselaer Polytechnic Institute, Troy, New York. Professor Sidney L e e s (Dartmouth College, Hanover, New Hampshire) is the General Chairman, and Allan R. C a t h e r o n is the Chairman of the Program Committee.

Case Institute of Technology, Cleveland, Ohio

Dr. Ellis A. J o h n s o n has been named Head of the Case Institute of Technology Systems Research Center, Dr. J o h n s o n has been a member of the Case Institute Staff since February 1962.

He succeeds Dr. Raymond J. N e l s o n, Professor of Mathematics and Director of the Computing Center, who has been Acting Director of the Systems Research Center since the death of Dr. Donald P. E c k m a n in May 1962. The late Dr. E c k m a n was the founder of the pioneering Center for research in the new field of Systems and the Chairman of the IFAC Advisory Committee since its foundation.

Dr. J o h n s o n is an internationally-famed authority on Operations Research. Before coming to Case he was Director of the Operations Research Office of the Johns Hopkins University from 1948 to 1961.

The Systems Research Center at Case Institute of Technology has sponsored the Second Systems Symposium held on April 4-5, 1963 in order to stimulate the growth of this new systems theory. The conference was designed to bring together a group of leading experts who are largely responsible for the present state of the art and to provide a forum for discussion of essential elements of the field.

The symposium was concerned solely with the topic of Systems Theory in particular the meeting aimed at clarifying the following issues:

1. Basic characteristics of systems theory.
2. Review of major developments achieved to date.
3. Statement of current problems of importance.
4. Prospect for the future.

An Operations Research Short Course, providing an intensive survey of the methods, techniques and tools of Operations Research, will be held at Case Institute of Technology, June 10-21, 1963. The program will be under dhe direction of Dr. Russel L. A c k o f f, Professor of Operations Research at Case.

The two-week introductory program, designed for men with research experience and an understanding of mathematical symbolism, will be conducted Mondays through Fridays with two three-hour sessions each day. There will also be dinner meetings and evening social hours to allow for informal discussions with the Case staff on specific problems and topics.

Primarily designed for those industries and branches of the government interested in investigating the potential of operations research, the programm will disclose new applications, while emphasizing time-proven methods, techniques and tools of the discipline.

The National Science Foundation has awarded Case Institute of Technology a grant of 500,000 Dollars to be applied toward the purchase of the new UNIVAC Scientific 1107 Thin-Film Memory Computer. It replaced a UNIVAC I computer and is 100 times faster than the UNIVAC I. Installation of the new computer took place on May 6, the computer should be running by July 1, 1963.

The new computer has a unique "memory" consisting of rows of metal dots on thin glass plates and its calculating speed is measured in billionths of a second. The main use of the computer will be in education. Amost every Case student will run several problems on the 1107 before he graduates. A large amount of computer time will be set aside for laboratory work in which the student actually programs and uses the computer, working on essential problems that arise in science, engineering or management. Several large computational problems which have originated on the Case Campus and which are too big for the present equipment will be quite easily accommodated on the new 1107.

Another major use will be to further research in computer science, using the computer to explore the possibilities of its own applications, particularily in the solution of very complicated mathematical problems.

The UNIVAC 1107, which is a solid state computer, is physically smaller than the UNIVAC I which utilizes vacuum tubes. It is the first of the "third generation" of commercially available computers and is the first large machine to employ a thin magnetic film control memory. The time required to read information from the thin-film memory is 600 billionths of a second.

In addition, this system has a core memory and a drum memory. The core memory contains 32,768 words; the drum memory 746,432 words. Access to the core memory takes about four millionths of a second. Each "word" in the memory is made up of 36 "bits" of information.

Associated with the UNIVAC 1107 are a UNIVAC paper tape system, ten Uniservo magnetic tape units, two UNIVAC high-speed printers, two card readers and one card punch. Each printing unit can print 600 lines of 130 characters each in a minute.

Calendar of Instrument Society of America and Jointly Sponsored National Meetings

March 13 - 14, 1963	13th National ISA Conference on Instrumentation for the Iron and Steel Industry. Roosevelt Hotel Pittsburgh, Pa.
April 29 - May 1, 1963	9th National ISA Analysis Instrumentation Symposium, with Section exhibit. Rice Hotel Houston, Texas.
May 6 - 9, 1963	9th National ISA Aero-Space Instrumentation Symposium. Jack Tar Hotel San Francisco, California.
May 8 - 10, 1963	4th National ISA Pulp & Paper Instrumentation Symposion, in conjunction with 9th ISA District III Southeastern Conference & Exhibit. Peabody Hotel Memphis, Tennessee.
May 13 - 15, 1963	6th National ISA Power Instrumentation Symposium. Bellevue-Stratford Hotel Philadelphia, Pa.
May 20 - 22, 1963	12th National Telemetering Conference, with exhibit. Co-sponsors: ISA, AIAA, IEEE, Hilton Hotel Albuquerque, N.M.
May 20 - 23, 1963	1st International Symposium on Humidity & Moisture, with exhibit. Co-sponsors: ISA, AMS, ASHRAE, National Bureau of Standards, U.S. Weather Bureau. Sheraton-Park Hotel Washington, D.C.
June 14 - 17, 1963	1st National ISA Biomedical Sciences Instrumentation Symposium, Contact: R.E. B e c k e r, Pacific Finance Corp., 621 South Hope Street, Los Angeles 17, California. Union Oil Co. Bldg. Los Angeles, Calif.
June 17 - 21, 1963	4th Biennial International ISA Gas Chromatography Symposium. Michigan State Univ. E. Lansing, Michigan.

Sept. 9-12, 1963	18th Annual International ISA Instrument-Automation Conference & Exhibit. McCormick Place Chicago, Illinois.
Nov. 18-20, 1963	16th Annual Joint Biomedical Engineering Conference, with exhibit. Co-sponsors: ISA, IEEE, Contact Dr. Fred A l t, Division of Research Sciences, National Institutes of Health, Bethesda 14, Maryland. Lord Baltimore Hotel, Baltimore, Maryland.
March 11-12, 1964	14th National ISA Conference on Instrumentation for the Iron and Steel Industry. Contact K.E. S m i t h, Power & Fuel Division, U.S. Steel Corporation, Hoemstead, Pennsylvania. Roosevelt Hotel Pittsburgh, Pa.
May 25-27, 1964	10th National ISA Aero-Space Instrumentation Symposium. Contact: J.K. S t o t z, Jr., Assistant Department Head - Instrumentation, Grumman Aircraft Engineering Corp., Bethpage, Long Island, New York. Baltimore Hotel, New York City.
Oct. 12-15, 1964	19th Annual International ISA Instrument Automation Conference & Exhibit. Coliseum New York City.
Nov., 1964	17th Annual Joint Biomedical Engineering Conference with exhibit. Co-sponsors: ISA, IEEE. Contact: Dr. Fred A l t, Division of Research Sciences, National Institutes of Health, Bethesda 14, Maryland. Cleveland, Ohio.
Oct. 18-22, 1965	20th Annual International ISA Instrument-Automation Conference & Exhibit. Sports Arena, Los Angeles, Calif.
Oct. 10-13, 1966	21st Annual International ISA Instrument Automation Conference & Exhibit. Coliseum New York City
Sept. 11-14, 1967	22nd Annual International ISA Instrument Automation Conference & Exhibit. McCormick Place Chicago, Illinois.
Oct. 14-18, 1968	23rd Annual International ISA Instrument Automation Conference & Exhibit. Coliseum, New York City.

Note: Unless otherwise indicated, the source of program information is: ISA Meetings Assistant, Penn Sheraton Hotel, 530 William Penn Place, Pittsburgh 19, Pennsylvania. The due date for submitting abstracts of papers generally is four months prior to the meeting.

What's New in CONTROL STANDARDS

By Dr. H.L. MASON, Veterans Administration, Hospital, 2650 Wisconsin Avenue NW., Washington 7, D.C., USA

The American Automatic Control Council's Terminology Committee brings up to date its report on U.S. standards activity published in CONTROL ENGINEERING, October 1961 and reprinted in the IFAC Information Bulletin no. 12 (March 1962) pp. 14/17. Included are new and tentative standards dealing with terms, symbols, and definitions for automatic control loops and components, including analog and digital computers.

We are indebted to McGraw-Hill Publishing Company for permission to reprint this report originally published in CONTROL ENGINEERING, May 1963, pp. 99/101.

AIA

Aerospace Industries Assn.
Shoreham Bldg.
Washington, D. C.

Specification NAS 942, a tentative draft of which is currently under review by users, lists 14 performance characteristics of bonded resistance strain gages and describes exact testing procedures for them.

Application of the definitions set forth in *EETC-5, Standard Gyro Terminology*, has been completed for *EPC 60-68, Rate Integrating Gyro Test Instructions; EPC 61-21, Rate Gyro Test Instructions*; and *EETC-11, Double-Integrating Gyro Test Instructions*; and is in process for *Directional Gyro Test Instructions, Free Gyro Test Instructions*, and *Essential Performance Criteria*. AIA plans similar terminology work for accelerometers and for reliability.

AIEE

American Institute of Electrical Engineers
Box A, Lenox Hill Station
New York 21, N. Y.

AIEE Standard No. 59A for Semiconductor Rectifier Components, produced by a committee under J. R. Thurell, became effective April 20, 1962. It consists of 106 definitions including names, electrical characteristics, circuits, and ratings for cells, diodes, and stacks. Additional proposals have been made to define physical structure, classes, and electrical ratings of pnpn-type switches.

ASA

American Standards Assn.
10 East 40th St.
New York 16, N. Y.

Sectional Committee X3, now chaired by C. A. Phillips, has adopted the new title Computers and Data Processing. Its present subcommittees include X3.2 on Coded Character Sets and Data Formats, which has recommended a seven-level set for information interchange; X3.3 on Data Transmission, which with EIA TR27.6 has sponsored the newly adopted *Standard Signaling Speeds*; X3.5 on Man-to-Man Communications, which plans to coordinate various subcommittee glossaries with those of ACM, AIEE, IRE, and the Federal Interagency Committee; and X3.6 on Problem Definition, which has recommended flow chart symbols. Joint technical groups representing X3 and X4, Office Machines, and X6, Electrical Standards for Data Processing, are preparing dimensional specifications for ½-in., seven-channel magnetic tape; 1⅛- and 1-in. punched tapes, and 80-column punched cards.

ASA Sectional Committee C85's *Terminology for Automatic Controls* was accepted by 22 sponsoring societies and trade associations on the second ballot. Chairman D. H. Smith expects the revised draft to be published in May 1963.

Chairman J. D. Tebo of Group 05, ASA C42, Definitions of Electrical Terms, has circulated a 240-page fourth draft of C42.05, *Fundamental and Derived Terms* for Sectional Committee approval.

Publication AIEE 91, *Graphic Symbols for Logic*

Diagrams, has been approved as an American Standard, ASA Y32.14-1962, UDC 621-3.003.6. It defines the functions of two-state devices, assigns logic levels and related truth tables, shows two sets of graphical representations, and gives examples of their application. Standard Y32.2-1962, *Graphical Symbols for Electrical and Electronic Diagrams*, has been approved as a revision of the 1954 edition. *Graphical Symbols for Process Flow Diagrams in the Petroleum and Chemical Industries* was issued in 1961 as ASA Y32.11.

Static Magnetic Storage Terms, 59 IRE 8.S1, has been approved as American Standard C16.35-1962. It contains about 40 definitions of physical parameters, pulse functions, and component parts.

AWWA

American Water Works Assn.
2 Park Ave.
New York 16, N. Y.

A task group headed by V. A. Appleyard is updating a 1949 glossary of terms used in water and sewage control, including the application of automatic controls to these activities.

EIA

Electronic Industries Assn.
11 West 42nd St.
New York 36, N. Y.

Subcommittee TR-27.2.1 has issued *Automation Bulletin No. 3A, Definitions for Numerically Controlled Machine Tools*. It contains 8 pages of minimum nomenclature with one block diagram, and has been correlated with AIA, ACM, IRE, and ASA C85.

Axis and Motion Nomenclature, RS-267, *Character Codes*, RS-244, and *One-Inch Perforated Tape*, RS-227, which refer to the locations and dimensions of the three-track tape used for numerical control of machine tools have also been issued. Other proposals under study by EIA, NMTBA, and AIA will cover construction standards for electronic components and block formats for perforated tape.

Groups P-3.7 and P-3 have sponsored RS-242, *Definitions for Electromagnetic Delay Lines*, which gives a score of terms and symbols, thoroughly diagrammed, that are applicable to the waveforms used in pulse circuitry.

The Joint Electron Devices Engineering Councils (JEDEC), sponsored by EIA and NEMA, include a committee JS-12 that has recommended *Letter Symbols and Abbreviations for Semiconductor Data Sheets and Specifications*, EIA RS-245 and NEMA SK53-1961. This standard lists 130 items together with criteria and conventions for using them.

JEDEC publication No. 33, *Display Storage Tube Nomenclature*, is a 1-page listing of proposed part names and symbols that may ultimately become an EIA-NEMA standard.

FCI

Fluid Controls Institute
P. O. Box 1485
Pompano Beach, Fla.

FCI 58-1, Definitions of Regulator Capacities, is a 5-page bulletin that applies to self-actuated devices used for regulation of pressure, temperature, liquid level, or differential pressure, with formulas based on an experimental constant RC_e. A revision of bulletin *FCI 55-1, Standard Classification and Terminology for Power-Actuated Valves*, is expected by the middle of this year.

IRE

Institute of Radio Engineers
Box A, Lenox Hill Station
New York 21, N. Y.

All IRE standards in force in December 1959 are now available under one cover as the 1961 *IRE Dictionary of Electronics Terms and Symbols*. This provides an alphabetical list of some 3,700 technical terms and their definitions, with indexes for graphical symbols or letter symbols, for electron tubes, semiconductor devices, feedback control systems, and electrical diagrams.

Standard 61 IRE 15.S1, *Definitions of Terms on Radio Transmitters*, is under review by ASA.

Proposed IRE Standard Definitions, Abbreviations, Letter Combinations, and Symbols for Analog Computers, 61 IRE 8.8 PS1, which appeared in *IRE Transactions ED-11*, February 1962, has been approved since then with only minor changes by the IRE Standards Committee.

IRIG

Inter-Range Instrumentation Group
Secretariat, Range Commander Conference
White Sands Missile Range, N. Mex.

This group has issued glossaries on *Frequency Coordination*, 111-60; *Tele-Communications*, 116-60; and *Telemetry*, 117-60.

ISA

Instrument Society of America
530 William Penn Place
Pittsburgh 19, Pa.

Instrumentation Flow Plan Symbols, RP5.1, recommends graphical standards with mnemonic letter designations for the elements of a piping or wiring system. It includes measuring and controlling devices commonly used in the process industries. RP34.1 in preparation will recommend control diagrams for the pipeline industry.

Dynamic Response Testing of Process Control Instrumentation, RP26.1, is a tentative recommended standard for testing, test equipment, and data presentation. A short illustrative glossary is included. RP26.2, RP26.3, and RP26.4 provide further details for pneumatic and electric outputs and for closed-loop actuators for final control elements.

Terminology and Specifications for Turbine-Type Flow Transducers, RP31.1, recommends terminology and symbols for turbine-type flow transducers with electrical output.

The Production Processes Standards Div. Committee 8D-RP42 is planning a recommended standard for instrument tubing fitting nomenclature.

A recommended practice, *Nomenclature and Specification Terminology for Aero-Space Transducers with Electrical Output*, is being prepared by Committee 8A-RP37 of the Aero-Space Standards Div., and publication is planned for some time this year.

A new publication, *Compilation of Standards and Practices for Instrumentation*, will be issued this year. It will include a compilation of currently available ISA recommended practices and references to instrumentation standards of other technical organizations. Also available in 1963 will be the *ISA Transducer Compendium* which presents static and dynamic characteristics of several thousand transducers manufactured in the U.S.

NEMA

National Electrical Manufacturers Assn.
155 East 44th St.
New York 17, N. Y.

Publication No. *ASI-1962, Industrial Automatic Systems*, defines 200 terms dealing with assemblies of functional elements including feedback loops for adjustable speed drives, programmed control of machine tools, computer control of machines, register and synchronizing control, integrated mill control, industrial process regulation, and automatic warehousing. Included are definitions of 55 general terms, 45 terms dealing with feedback control system types and components, and 100 terms concerning industrial computer and digital systems.

Electrical standards for machine tools are to be consolidated by NEMA for the Industrial Electric Equipment Council, recently organized by NMTBA and major auto manufacturers to supersede the Joint Industry Conference.

NFPA

National Fluid Power Assn.
5595 North Hollywood Ave.
Milwaukee 17, Wis.

It is hoped that ASA Sectional Committee B93, newly created under the sponsorship of NFPA, will adopt NFPA's *Glossary of Terms for Fluid Power, Third Edition*, now nearing completion. NFPA has also urged reactivation of *ASA Y32.10, Graphic Symbols for Fluid Power*.

NMTBA

National Machine Tool Builders Assn.
2139 Wisconsin Ave.
Washington 7, D. C.

The NMTBA's subcommittee on numerical controls has voted to recommend to the industry the EIA *Definitions for Numerically Controlled Machine Tools* and the tentative *Axis and Motion Nomenclature*, EIA 27.21.3.

PPMA

Precision Potentiometer Manufacturers Assn.
27 East Monroe St.
Chicago 3, Ill.

In January 1962, PPMA approved *Precision Potentiometer Terms and Definitions* prepared by a group headed by Paul Hines. It is customer oriented and deals primarily with wirewound types. Many definitions are based on *MIL-R-129348*, and the report of EIA subcommittee SQ 6.3. Plans are being made to extend the work to cover nonwirewound types, inspection, and environmental tests.

SAMA

Scientific Apparatus Makers Assn.
20 North Wacker Dr.
Chicago 6, Ill.

Standard Load Cell Terminology and Definitions, the work of a subcommittee under H. E. Lockery, was approved by the Industrial Instrument Section last November. This standard lists 45 preferred terms for elements and for performance of electrical, hydraulic, pneumatic, and mechanical devices used for accurate measurement of weight and force. A test procedures standard is now being formulated.

A committee of the Recorder-Controller Section, under W. D. Wood, is studying a glossary of 75 terms and definitions dealing with measurement, operating variables, and performance.

SCI

Simulation Councils, Inc.
P. O. Box 504
Sunnyvale, Calif.

A committee under J. E. Sherman has prepared *Terms Commonly Used to Specify General Purpose Analog Computers*, a set of definitions and test methods. This will eventually be offered for integration with the work of IRE 8.8.

ACKNOWLEDGMENT

G. A. Biernson, W. I. Caldwell, A. G. Kegel, and P. Harriot, members of the committee, assisted with the preparation of this article.

PUBLICATIONS

Belgium

4.0.5.1. PROCEEDINGS OF THE 3RD INTERNATIONAL ANALOGUE COMPUTATION CONFERENCE (Opatija, 5-8 September, 1961), Brussels, 1962, 700 p. This volume contains 3 sections devoted respectively to:

- analogue computation in mathematical and physical problems.
- analogue computation in systems engineering.
- analogue and hybrid computer techniques and devices.

It can be purchased from:

Presses Académiques Européennes
98, chaussée de Charleroi
Brussels 6.

5.6.1.0. PROCEEDINGS OF THE INTERNATIONAL SEMINAR ON AUTOMATIC CONTROL IN THE IRON AND STEEL INDUSTRY. (in French, English, German or Italian). Brussels, Presses Académiques Européennes, 1963, 428 p., 410 illus., 800 FB or 16 Dollars.

Germany

2.0. LEHRGANG DER REGELUNGSTECHNIK (Courses on Automatic Control) by J.C. G i l l e, M. P é l é g r i n, P. D e c a u l n e. München. R. Oldenbourg Verlag, 1963.

Vol. 2. BAUELEMENTE DER REGELKREISE (Control-loop components) 397 p., 436 illus., 54,-- DM.

Vol. 3. ENTWURF VON REGELKREISEN. AUFGABEN UND LÖSUNGEN (Control-loop synthesis, Problems and solutions). 222 p., 280 illus., 48,-- DM.

2.0. DIE SELBSTTÄTIGE REGELUNG (Automatic Control) by A. L e o n a r d. Berlin-Göttingen-Heidelberg. Springer-Verlag, 1962, 397 p., 367 illus., 54,-- DM.

4.0.5.1. AUFBAU UND WIRKUNGSWEISE ELEKTRONISCHER ANALOGRECHNER (Construction and operation of electronic analogue computers) by W. A m e l i n g. Braunschweig. Fried. Vieweg & Sohn, 1963, 392 p., 274 illus., 28,80 DM.

4.0.5.2. TASCHENBUCH DER NACHRICHTENVERARBEITUNG (Pocketbook of data processing) by K. S t e i n b u c h , Editor. West-Berlin, Lange & Springer, 1962, 1521 p., 1295 illus., 98,-- DM.

5.0. DIE PLANUNGSRECHNUNG IN WIRTSCHAFT UND INDUSTRIE (The programmed computation in management and industry) (translated from English into German) by A. V a z s o n y i . München. R. Oldenbourg Verlag, 1962, 424 p., 121 illus., 50,-- DM.

6.7. AUTOMATIK ABC 1963 (ABC of Automatic Control 1963) (2nd edition) by R. R ö h r , Editor. Hamburg. R. von Decker's Verlag, 1963, 281 p., 25,-- DM.

United Kingdom

2.0. AN INTRODUCTION TO THE MATHEMATICS OF SERVOMECHANISMS, by J.L. D o u c e. London. English Universities Press, 1963, 240 p., 25 s.

2.3.2.0. NONLINEAR AUTOMATIC CONTROL by J.H. G i b s o n. London, MacGraw Hill, 1963, 608 p., 6. 8 s.

2.5. ANALYSIS OF LINEAR TIME-INVARIANT SYSTEMS by W.M. B r o w n. London. MacGraw Hill, 1963, 350 p., 77 s. 6 d.

4.0.5.0. ANNUAL REVIEW IN AUTOMATIC PROGRAMMING. Vol. 3, by R. G o o d m a n, Editor. Oxford, Pergamon Press, 1963, 360 p., 80s.

4.0.5.2. DIGITAL COMPUTER TECHNOLOGY: AN INTRODUCTION TO LOGIC DESIGN AND PRACTICE, by I.H. G o u l d and F.S. E l l i s. London. Chapman and Hall, 1963, 197 p., 42 s.

5.0. MODERN AUTOMATICS by D. F o s t e r. London. Sir Isaac Pitman & Sons, 1963, 305 p., 42 s.

5.0. AUTOMATIC PROCESS CONTROL by W.A. H a d l e y and G. L o n g o b a r d o. London. Sir Isaac Pitman & Sons, 1963, 307 p., 45 s.

B.C.A.C. Record 1961-62

The B.C.A.C. Record is published for the British Conference on Automation and Computation through the agency of The Institution of Production Engineers, 10 Chesterfield Street, London, W. 1.

Copies are obtainable from: W. H e f f e r & S o n s Ltd., Petty Cury, Cambridge.

H.K. L e w i s Ltd., 136 Gower Street, London, W.C. 1. Price: 3/6d. net Postage paid 3/10d.

The Record is an account of the work of B.C.A.C. over the past two years and includes the following articles (besides reports on BCAC activities):

First Annual Lecture: Mathematics - .
Friend or Foe? D.G. Christopherson.
Foreign Relations. J.F. Coales.
Education and Training. G.D.S. MacLellan.
Research and Development. J.F. Coales.
Public Relations. W.C.F. Hessenberg.
Second Annual Lecture: Automation - .
The Next Phase: Can Managers be Automated? B.V. Bowden.
National Productivity Year. Sir Charles Norris.

An International Journal: AUTOMATICA

Under the title "AUTOMATICA", Pergamon Press, have started the publication of a quarterly international journal on Automatic Control and Automation. Publication will be in English, French, German or Russian with abstracts in all four languages.

The Chairmen of the Honorary Editorial Advisory Board are: Mr. H. C h e s t n ut, Schenectady, N.Y., U.S.A., and Professor A. T u s t i n, Imperial College of Science and Technology, London.

The Executive Editors are:

For the United States: Dr. J.A. A s e l t i n e, Los Angeles, Calif., and Prof. H.M. P a y n t e r, MIT, Cambridge, Mass.

For the United Kingdom: Professor G.D.S. M a c L e l l a n, The University of Glasgow, Glasgow.

For Continental Europe: Professor V. B r o i d a, Boulogne-sur-Seine, France.

USA

1.1.3.0. NONLINEAR DIFFERENTIAL EQUATIONS AND NONLINEAR MECHANICS (Proceedings of a symposium held on July 31 - August 4, 1961, at the U.S. Air Force Academy, Colorado Springs, Colorado). by J.P. L a S a l l e, S. L e f s c h e t z. Editors. New York. Academic Press, 1963, 505 p., 18 Dollars.

1.1.4.0. DIFFERENTIAL-DIFFERENCE EQUATIONS by R. B e l l m a n and K.L. C o o k e. New York. Academic Press, 1963, 462 p., 13,75 Dollars.

2.0. SYNTHESIS OF FEEDBACK SYSTEMS by I.M. H o r o w i t z. New York. Academic Press, 1963, 726 p., 16,50 Dollars.

4.0.5.0. ADVANCES IN COMPUTERS. Vol. 3. by F.L. A l t, M. R u b i n o f f. Editors. New York, Academic Press, 1962, 361 p., 12 Dollars.

5.7.6. OPTIMIZATION TECHNIQUES WITH APPLICATIONS TO AEROSPACE SYSTEMS, by G. L e i t m a n n, Editor. New York. Academic Press, 1962, 453 p., 16 Dollars.

NOTE ON INFORMATION BULLETIN NO. 16

Information to appear in the Information Bulletin No. 16 should reach the Editor:

Professor Ing. Dr. V. Broida,
Honorary Editor of I.F.A.C.,
13, rue de la France-Mutualiste,
Boulogne-sur-Seine (Seine), France,

not later than 10th September, 1963.