IFAC
INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL

Information Bulletin n°12

March 1962

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Honorary Editor of IFAC

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

CONTENTS

IFAC NEWS

INTERNATIONAL BIBLIOGRAPHY OF AUTOMATIC CONTROL

The first issue of the International Bibliography of Automatic Control, prepared with the assistance of the Department of Natural Sciences of U.N.E.S.C.O. and with the co-operation of National Member Organizations and of the Technical Committee on Bibliography (Chairman: Mr. Max A j n b i n d e r) of I.F.A.C. and edited by prof. Ing. Dr. V. B r o i d a, is expected to be published by Presses Académiques Européennes, Brussels, in March 1962. This Bibliography will include the titles of papers and books from countries all over the world.

The first issue will contain the following items:

(1) Foreword (in English and in French)
(2) Notice to readers (in English and in French)
(3) General classification (in English and in French)
(4) 936 entries, classified according to the Classification (3) and containing, each, the titles, in English and in French, of a book or of a paper, with the indication of the original language and other usual bibliographical references
(5) An Author's index
(6) A list of periodical bibliographical sources used
(7) A list of non-periodical bibliographical sources (books used).

The preparation of the second issue of the Bibliography is nearly completed; it will comprise 974 entries and is expected to be published some weeks after the first issue.

Meanwhile, work has already started also on the third issue for which 701 bibliographical references were already available on February 1, 1962.

The contributions of National Member Organizations of I.F.A.C. - although very important from several countries - have not yet been developed exactly to the point desired. For instance, out of the 936 entries of the 1st issue, only 415 were supplied by National Member Organizations, the remaining 521 being obtained by direct search. Out of the 974 entries of the 2nd issue, only 138 were received from National Member Organizations, the remaining 836 being due to direct search. Out of the 701 entries of the 3rd issue, only 36 were received from National Member Organizations, the remaining 665 being due to direct search. It is, however, expected that the contributions of National Member Organizations will much increase in the following issues. The main problem is the necessity of a very swift supply of entries if the Bibliography is to follow immediately the actual publication of the titles referred to. This is why direct search has been extensively used up to now.

The form under which the entries will be published will allow to use them in two different ways:

- either, as they are, for the period covered by the issue
- or, by cutting out the entries and by sticking them on cards of appropriate dimensions, for creating a permanent classified file which would be periodically completed by the entries published in the following issues.

It is expected that this method will most efficiently assist scientists, engineers and manufacturers interested in publications of given particular branches in a very large field of theories, components and applications of modern automatic control. In fact, the International Bibliography of Automatic Control will cover all problems such as measurement, digital and analogue computing, engineering and bio-cybernetics, standards, terminology, symbols, patent information, bibliography, teaching etc. as long as they may interest, directly or indirectly, automatic control engineers.

It is intended to publish this Bibliography quarterly (the 3 first issues being likely to be published at shorter intervals). Orders should be sent to Presses Académiques Européennes, 98 Chaussée de Charleroi, Brussels, Belgium. The price per volume (4 issues annually) is $ 25 postage included.

I.F.A.C. SYMPOSIUM ON THE THEORY OF SELF-ADJUSTING SYSTEMS

Under the joint sponsorship of the I.F.A.C. Technical Committee on Theory (Chairman: academician B.N. P e t r o v, U.S.S.R.) and of the Italian Commission on Automation (Chairman professor A. M a r i n o, Rome) a Symposium on the Theory of Self-adjusting Systems will be held in Rome, Italy, on April 26, 27 and 28, 1962.

In order to ensure a maximum efficiency of this Symposium, the number of attendants has been restricted to those experts who have directly been invited to attend. We shall publish information on the results of this Symposium in our further issues.

SECOND CONGRESS OF I.F.A.C. 1963

The Second Congress of I.F.A.C. on Automatic Control is to be held in Basle from Aug. 27 to Sept. 4, 1963 on the invitation of the Swiss Association of Automatic Control. Invitations to authors intending to present a paper have been distributed to the National Member Organizations of I.F.A.C. and to individuals during the past months. Until now about 80 authors have announced that they wish to present a paper at the Congress. As the possibility exists to adopt 100 papers, more announcements of papers are welcome, especially with topics on automatic control theory, on applications of automatic control, and on components of control devices. Those authors who have not yet received the printed invitation should ask the I.F.A.C. Secretary for a copy. Those authors, however, who have already received the invitation and wish to present a paper should inform the I.F.A.C. Secretary of their intention, if they have not done so yet, indicating the subject of their paper.

The final date for the submission of the full paper to the National Member Organizations of I.F.A.C. is generally fixed for June 1st, 1962. The National Member Organizations will review the papers and pass them on to I.F.A.C. until September 1st, 1962.

All further information about the length of the papers, the languages to be used and the number of copies is available from the I.F.A.C. Secretary, Postfach 10250, Düsseldorf 10, Germany.

MEETING OF THE I.F.A.C. EXECUTIVE COUNCIL

A meeting of the I.F.A.C. Executive Council will be held in Cambridge, United Kingdom, from June 4 to June 7, 1962.

The Chairmen and Vice-Chairmen of the I.F.A.C. Technical Committees are invited to attend the meeting and to report on the activities of their respective Committees during the last year.

A meeting of the I.F.A.C. Bibliography Committee will be held at Cambridge on June 6th, 1962.

NEWS FROM NATIONAL MEMBERS

USA

AMERICAN AUTOMATIC CONTROL COUNCIL

(Two year period 1962 - 1963)

President	Harold C h e s t n u t, Past President of I.F.A.C.
Vice-President	William E. V a n n a h
Secretary-Treasurer	Gerald W e i s s (Polytechnic Institute of Brooklyn, Brooklyn, N.Y.)

Delegates and Alternates

American Institute of Chemical Engineers (A.I.Ch.E.)
David M. B o y d and Joel O. H o u g e n

American Institute of Electrical Engineers (A.I.E.E.)
Rowland G. L e x, Jr., and Theodore J. W i l l i a m s

American Society of Mechanical Engineers (A.S.M.E.)
William E. V a n n a h and Henry M. P a y n t e r

Institute of Radio Engineers (I.R.E.)
John E. W a r d and John M. S a l z e r

Instrument Society of America (I.S.A.)
Geert H. B o u m a n and Raymond K. A d a m s

Committee Chairmen

Theory:	John A. A s e l t i n e (Aerospace Corp., Los Angeles, Calif.)
Applications:	Irving L e f k o w i t z (Case Institute, Cleveland, Ohio)
Components:	J. Lowen S h e a r e r (Massachusetts Institute of Technology, Cambridge, Mass.)
Education:	James H. M u l l i g a n, Jr. (New York University, New York, N.Y.)
Terminology:	Henry L. M a s o n (National Bureau of Standards, Washington, D.C.)
Bibliography:	Thomas J. H i g g i n s (University of Wisconsin, Madison, Wis.)

WORLDWIDE AUTOMATIC CONTROL

International Events

I.F.I.P. (INTERNATIONAL FEDERATION FOR INFORMATION PROCESSING)

M e m b e r s h i p

Two new nations, Italy and Argentine, have been formally admitted to the International Federation for Information Processing, raising the total number of member countries in the Federation to nineteen. The two new nations join Australia, Belgium, Canada, Czechoslovakia, Denmark, Finland, France, Germany, Japan, Netherlands, Poland, Spain, Sweden, Switzerland, United Kingdom, United States and U.S.S.R.

I.F.I.P. (see Bulletin no. 6 pp. 13-14, Bulletin no. 7 pp. 6-7, Bulletin no. 10 p. 17) is a federation of national professional and technical societies devoted wholly, or in part, to the information processing sciences. Its name was changed from International Federation of Information Processing Societies (I.F.I.P.S.) to International Federation for Information Processing (I.F.I.P.).

S e c o n d C o n g r e s s o f I. F. I. P. 1 9 6 2

We have announced in Bulletins nos. 9 (p. 11) and 10 (p. 17) the 2nd Congress of I.F.I.P. This most comprehensive examination of the state of the art of information processing yet attempted has been set for August 26 - September 1, 1962, in Munich, Germany. A program structure for the I.F.I.P. Congress 1962 has now been accepted by the Council of I.F.I.P.

Scientists and engineers from 18 countries have submitted 650 abstracts from which the final program of 88 formal papers will be selected. The Congress will also offer a Survey Session of four invited papers and 16 additional invited papers from eminent scientists. Three sessions of five papers each will be devoted to techniques, computer and peripheral equipments. A series of 27 symposia and panel discussions are planned to permit free exchange of current and timely information among small groups of active contributors to maximize the transfer of knowledge among scientists. A global exhibit of the latest techniques and information processing equipment is scheduled for I.F.I.P. INTERDATA. Four special tours of European information processing activities will be offered during and following the Congress.

The formal papers will sample progress over a broad range of the information processing sciences. The 20 formal sessions will have the following titles:

Business Data Processing, Algebra, Partial Differential Equations, Differential and Integral Equations, Optimization Programming, Real Time Information Processing, Information Retrieval, Linguistic Analysis and Mechanical Translation of Languages, Digital Communication, Automata Theory, Machine Learning, Artificial Perception, Programming Languages and their Processing, Advanced Programming, Memory Techniques, Circuits and Components, System Design, Switching Theory.

Program Chairman for the Congress is Niels Ivar B e c h of Regnecentralen, the Danish Institute of Computing Machinery, Copenhagen; Vice Chairman is Dr. van der P o e l of the Laboratory of the Dutch Postal and Telecommunications Services, Netherlands. The I.F.I.P. Council representatives constitute the membership of the Program Committee. Professor Alwin W a l t h e r of the Technische Hochschule, Darmstadt, Germany, is General Chairman of the Congress.

Arrangements for attendance may be made through any Wagon-Lits-Cook travel office, the official agent for the I.F.I.P. Congress 62, or through the National Technical Society specializing in information processing in each country.

T h i r d C o n g r e s s o f I. F. I. P. 1 9 6 5

The next I.F.I.P. Congress will be held in 1965; it will be in Europe too, its location being subject to official invitations from various nations.

I. F. I. P. B u l l e t i n

Professor M. L i n s m a n of Belgium, Editor of the I.F.I.P. Bulletin has issued its first edition. The Bulletin, published in French and English, is to make available detailed news about I.F.I.P. to the national technical societies so that they in turn can publish the information in their own publications.

A.I.C.A. (International Association of Analogue Computation)

The A.I.C.A. (Association Internationale du Calcul Analogique) organizes in 1962 the following t w o s y m p o s i a :

- in co-operation with A.F.R.A. (Association Française de Régulation et d'Automatisme - French Association of Automatic Control) and A.F.C.A.L.T.I. (Association Française de Calcul et de Traitement de l'Information - French Association of Computation and Data Processing) on

  "Modern Computation Techniques and Industrial Control"

  to be held in Paris on May 28 to 31, 1962. Further particulars can be obtained from A.F.R.A., 19, rue Blanche, Paris (9e)

- an international seminar on

  "Applications of Analogue Computation to Aeronautics"

  to be held in London during the week following September 9, 1962, the organization of this seminar being in the hands of professor R e d s h a w (University of Birmingham) assisted by Messrs. Humphrey N e l s o n and John M i - c h e l (National Physical Laboratory, Teddington). Further particulars can be obtained from A.I.C.A., 50, avenue Franklin D. Roosevelt, Brussels (Belgium).

F.I.D. (INTERNATIONAL FEDERATION OF DOCUMENTATION)

The F.I.D. (Federation Internationale de Documentation), 7 Hofweg, The Hague, Netherlands, prepares, with financial collaboration of the National Science Foundation in Washington, D.C., a comprehensive inventory of abstracting services covering the fields of science, technology and social sciences.

The study will probably take two years. The data are gathered by means of a questionnaire distributed at the beginning of February 1962. Besides general questions about nature and scope of each abstracting service, the questionnaire is intended for the obtaining of detailed information, for example, on the number of periodicals consulted during a year, the existence of a reproduction service, and whether translations can be made.

Upon completion of this project, F.I.D. plans to establish an international information centre, the first object being to give supplementary information on data revealed by the questionnaire.

F.I.D. would welcome the co-operation and help of everyone concerned, for it will be an extremely useful and indispensable guide for everyone as a key to the literature published throughout the world, and covering pure and applied sciences, technology, medicine, agriculture and social sciences.

INTERNATIONAL SYMPOSIUM ON THE APPLICATION OF AUTOMATIC CONTROL IN PROSTHETICS DESIGN

The Yugoslav Committee for Electronics and Automation invites to take part in the International Symposium on the Application of Automatic Control in Prosthetics Design to be held in Opatija from August 27 to September 1, 1962.

The recent advances of electronics and automation have induced the Committee to believe that an international round-table discussion on the scientific implications and automatic control in the improvement of prosthetic devices would be both justifiable and fruitful. It is intended to discuss such topics as bioelectrical control, adaptive control, power units and energy sources for prosthetic devices.

The Symposium is planned in such a way as to provide ample time for informal discussions and exchange of opinions. The main topic will be introduced by invited speakers after which other views and contributions will follow. All discussions will be recorded and published in English.

Since prosthetics design can be regarded as part of the more general subject of remote handling, the Symposium will also treat the problems of materials handling in hostile environments from the aspect of automatic control.

Participation fees are $15 per person.
Languages are English and Russian.

The tentative program includes the following topics and papers:

1. Bioelectrical control, electrophysiological and technical aspects, by prof. K o b r i n s k i 's group, Moscow, and by prof. L y m a n 's group, U.C.L.A., Los Angeles
2. Local Feedback loops in the design of prosthetic devices, by prof. T o m o v i c 's group, Belgrade, and by Dr. Z o t o v i c, Belgrade
3. Power units and energy sources, by prof. L y m a n 's group, U.C.L.A., Los Angeles
4. Remote handling and automatic control, including design of nuclear handling equipment and applications of artificial hands in industry.

The discussion should cover engineering, medical and application aspects of the introductory papers.

The number of participants will be restricted. Applications should be sent to E.T.A.N., Yugoslav Committee for Electronics and Automation, Terazije 23, Belgrade, before March 15, 1962, indicating whether any written contribution will be made.

EUROPEAN FEDERATION OF CHEMICAL ENGINEERING

In the second meeting of the Working Party on "Chemical Process Automation" at The Hague on Nov.17, 1961, the chairman gave an account on a draft system of classification for its domain of literature which has been prepared on the basis of the I.F.A.C. System, but which has not yet been discussed with an authorized I.F.A.C. representative. The Working Party resolved to suggest to I.F.A.C. that this modified classification system should be used for the lists of literature issued by I.F.A.C. The Working Party will limit its activities to the setting up of a classification system without undertaking any documentation work of its own. Attempts would be made to come to an agreement with I.F.A.C. on its own draft and to see whether any other classification system would suit the objects of the Working Party better than the system now under discussion.

Austria

The Ö.A.A. (Austrian Committee for Automatisation) had organized the following lectures in Vienna during the past months:

- The status of automatisation in the chemical industry, by K. C z e i j a
- Systems of pneumatic control, transfer and computation, by G r o s s l e r c h e r
- Electromagnetic protections, important components of electric control, by F. M e t z g e r
- The memory in electrotechnical engineering, by Kurt S a t t e l b e r g .

Belgium

The I.B.R.A. (Belgian Institute of Automatic Control) has already organized or will still organize the following lectures:

- Present trends of industrial control techniques, by B. P e r e t z
- Theoretical basis of optimal automatic controls, by J. C h a r l e s
- Optimal positioning of controlling devices. Comparison of control by saturated error signal and by variable parameter method, by J.P. W a h a
- Multiple-controlled magnitudes servomechanisms; non-interacting control, by J.M. A r c h a m b e a u
- Automatic Control of superheaters, by A. C o l a s s i n
- Methods of nuclear reactor control, by J.P. C o n t z e n
- Application of an industrial computer to glass manufacturing, by A. de C a l l a t a y .

Germany

Under the auspices of the VDI/VDE Group on Automatic Control a

Symposium on digital signal processing in automatic control

will take place on March 13, 14, and 15, 1962 at Heidelberg with the following program:

- "Introduction into digital system techniques" by W. O p p e l t
- "Logical elements and their technical achievement" by G. S i n n
- "Fundamentals of digital computers" by E. K r o c h m a n n
- "Working method of digital computers with memorized program" by H.J. D r e y e r
- "The converter as a connecting link between analog and digital signal processing" by K. S t a h l
- "Digital control and program control" by W. L e o n h a r d
- "Components for digital controllers" by K. E r t e l
- "Miniaturisation of digital construction groups" by H.G. L o t t
- "Digital program control for motor-car industry testing installations" by S. W a l l e r
- "Digital control of angular speed and of the relationship between two angular speeds" by G. K e s s l e r
- "Position control with digital inputs, e.g. in machine-tools" by P. B o e s e
- "Digital interpolation in digital control systems with coding and checking on the requirements side e.g. for machine-tools" by E. G ö t z
- "Control results in digitally-controlled machine tools" by H. H e r g e r
- "Control of rolling mills by means of digital elongation measurement" by E. F i e b i g
- "Digital methods in thickness control of cold-rolling mills" by H.J. H e n k e and G. M e n z e l
- "Tube and rod presses with digital speed control" by R. S c h m i d t
- "Problems of digital networks controllers for distribution installations" by A. de Q u e r v a i n
- "Digital angular speed control of turbines" by D. E r n s t
- "Digital information processing in materials transfer" by G. P o k l e k o w s k i
- "Automatic blast-furnace loading by belt conveyors" by H.G. V o g e l s a n g

- "Supervisory control of chemical installations with digital computers" by Th. A n k e l
- "The goal of modern computer installations for data elaboration and processing in chemical and metallurgical industries" by K. B i n g e
- "Adaptation of gas-chromatographs to control loops by means of digital readout devices" by H. K ü r n e r
- "The mean value as a class value and its application to the computation of the input of a control loop" by E. W e b e r.

Switzerland

The Swiss Association for Automatics (SGA) announces a

Conference on Control Problems in connection with the water discharge in hydraulic power stations

The conference will be held in Bern, Switzerland, on May 3 and 4, 1962. Papers will be read partly in French and partly in German language. The following papers will be read:

- Control of weirs, by G. L e u e n b e r g e r
- Control of the weir in Rheinau power station, by. E. E l m i g e r
- Output control of power stations with small water reservoirs, by M. C u é n o d and M. D y s l i
- Output control of power stations with respect to conditions imposed by weirs and reservoirs, by R. C o m t a t
- Control dependent on water level, by R. W e i d m a n n
- Regulation tests with water turbines, by G. H u t a r e w
- Frequency stabilisation by river power stations, by G. A n d r e s
- Proportional equipment for frequency control in high pressure power stations working in cascades, by H. E g l i
- Optimization of water consumption from reservoirs by computers, by P.A. B o b i l l i e r
- Water flow control by the regulation of Kaplan turbines in river power stations, by L a n z
- Pneumatic and electronic instruments for the control of turbines and weirs, by H. R e m u n d.

Further information from SGA, Schweizerische Gesellschaft für Automatik, Sternwartstr. 7, Zürich 6.

USA

Best Paper Price

The 1961 Joint Automatic Control Conference has granted the "Best Paper Prize" as follows:

First Prize for "A Minimal Time Discrete System" by C.A. D e s o e r and J. W i n g
Second Prize for "The Linear Properties of Pneumatic Transmission Lines" by N.B. N i c h o l s
Honorable Mention for "Transfer Function Tracking and Adaptive Control Systems" by N.N. P u r i and C.N. W e y g a n d t.

Symposium on the mathematical theory of automata

The twelfth annual international Polytechnic Symposium to be held in New York City on April 24-26, 1962 will be devoted to "The Mathematical Theory of Automata" and will emphasize the application of mathematical techniques to information-handling systems. Specific proposed topics are as follows:

1. Computability, classes of Turing machines and automata, unsolvable problems, problem complexity.
2. Symbolic logic, methods for programming logical problems, theorem proving, algorithms for qualification theory.
3. Procedures for search and learning, search in discontinuous and discrete systems, random versus systematic methods, convergence and random walk, Pandemonium and Perceptrons.
4. Abstract algebra and linear graphs; applications of lattice theory, semigroups, rings, etc., to coding languages, and sequential transducers; application of linear graphs to route problems, state diagrams, etc.
5. Synthesis procedure, design with "neurons" or other specific types of elements, reliability.

The objectives of the Symposium are twofold: 1) to encourage the development and exposition of basic theories and mathematical tools which will be of help to the engineer in analyzing, designing, and using information-handling systems, and 2) to provide a forum for the exchange of ideas among applied mathematicians, computer engineers, those interested in information theory, etc. The Proceedings will be published as Volume XII of the Polytechnic Symposia Series.

Further information may be obtained from professors A.E. L a e m m e l and E.J. S m i t h , Co-Chairmen of the Symposium Committee, Polytechnic Institute of Brooklyn, 55 Johnson Street, Brooklyn 1, N.Y.

FREE IDEAS, OPINIONS AND SUGGESTIONS

CONTROL TERMINOLOGY

A Report on U.S. Standards Activity

By H.L. Mason, National Bureau of Standards

This report, prepared by the chairman of the American Automatic Control Council's Terminology Committee, Mr. H.L. Mason, examines all the present and tentative standards dealing with terms, symbols, and definitions for automatic control loops and their components, including computers.

Several U.S. professional societies have had control systems terminology committees for a decade or more, but control terminology is still in a state of flux. Since January 1956, when the *ASME Transactions* included a review of the situation as of late 1954, both analog and digital computers have become increasingly important to the control engineer. The following survey examines the status of formalized collections of terms, definitions, and symbols for automated computation and actuation developed in the United States. This annotated listing should encourage precision of language, prevent unnecessary duplication of effort, and provide a base for building an international control vocabulary.

The writer would like to thank the many society and organization officials who have provided up-to-date information about their activities.

FOR TERMINOLOGY ON	SEE LISTING UNDER
Components	AIA, AIEE, ASME, ASA, DOD, EIA, FCI, IRE, ISA, JIC, NFPA
Systems	ASME, ASA, EIA, IRE, IRIG, NEMA
Measurement	ASA, ISA, NFPA, SAMA
Digital Computers	AIEE, ASA, ACM
Analog Computers	IRE
For control symbols . . .	. . . see AIEE, ASME, ASA, DOD, IRE, ISA, JIC

AIA

Aerospace Industries Association, Shoreham Building Washington, D.C.

Specification *NAS 710, Resistors: Variable, Precision*, 1955, includes some 40 definitions relating to design, performance, inspection, and testing.

Standard Gyro Terminology Report EETC-5, prepared by a committee under R. Archibald, provides 76 definitions for categories, types, and performance characteristics.

AIEE

Amer. Inst. of Electrical Engineers, 345 East 47th St., New York 17, N.Y.

The AIEE Feedback Control Systems Committee has been represented on the committees for *ASA* Y10-14 and C85. Its working group on standards, chaired by A. G. Kegel, expects that a report on analog-to-digital converters will be presented for approval soon. Also under review is *AIEE 59-357, Specification Standards for Electrohydraulic Flow Control Servovalves*, by W. J. Thayer, which provides three pages of valve parameter definitions, six of physical specifications, two of performance specifications, and 18 of recommended test procedures, all with illustrations; these standards are compatible with *SAE ARP 490*. Still another being reviewed is *CP 59-467, General Specifications for Ac Tachometers*, by W. E. Sollecito, listing (with four illustrations) the potential errors and ways of measuring them; the AIEE group is maintaining liaison with SAE's Precision Control Motors group ARP 497.

The Instrumentation Division, under the chairmanship of F. Hamburger, Jr., has had active representation on *ASA C42, C39*, and *C85*.

AIEE Transactions Vol. 77, Part I, pp. 429-432, contains the latest definitions approved by the Magnetic Amplifiers Committee, under R. E. Morgan, Subcommittee Chairman.

The Computing Devices Committee sponsored two papers: *Proposed Symbology for Digital Systems, CP-60-1224*, and *Dictionary of Switching Theory Terms: Preliminary Draft, CP-60-1225*.

ASME

Amer. Soc. of Mechanical Engineers, 345 East 47th St., New York 17, N.Y.

Automatic Control Terminology ASME Std. 105, 1954, is a 15-page glossary evolved from a succession of earlier efforts initiated by the Instruments and Regulators Division. (See *Mechanical Engineering*, March 1944, pp. 205-206; February 1946, pp. 134-138; June 1952, pp. 486-489.) It derives chiefly from usage in the process industries, and much of its content has been carried over into *ASA C85*. The principal sections relate to controllers, their modes and adjustments, their elements and characteristics, block diagrams and symbols for combination systems, and elements and characteristics of processes.

Preferred Standards for the Presentation of Frequency Response Data, ASME Std. 107, was issued in 1955 by the Instruments and Regulators Division's Dynamic Systems Committee, R. Oldenburger, Chairman. It is a brief document explaining the meaning of magnitude, magnitude ratio, phase angle, and transfer function.

Terminology Chairman J. Stern of the Automatic Controls Division has begun a compilation of terms and definitions for measurement fundamentals, including statistical parameters, which should be completed in 1963. The division has been active in the preparation of *ASA C85* and has just submitted for adoption an illustrated *Diaphragm-Actuated Control Valve Terminology* based on *ASME 59-A-322*, covering physical descriptions of valves and actuators and their functions and characteristics.

ASA

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

Proposed Terminology for Automatic Controls, ASA C85, is a 90-page alphabetical listing of preferred terms and their definitions, many of which are illustrated. The terms relate to types and components of closed-loop systems, especially idealized linear ones, with their generalized paths, signals, modes, and parameters of control, and graphical and mathematical presentation of performance. Many basic concepts compatible with *ASA C39* and *ASA C42* are included. In 1955, 22 interested professional societies and trade associations formed a committee, led by Chairman M. A. Princi, in an effort to blend the usages of aeronautical, chemical, electrical, electronic, and mechanical engineers. *ASA C85* has been printed by the ASME and was circulated late in April for approval by the sponsors.

Industrial Control Apparatus, ASA C19.1-1943, and *AIEE 15-1944*, provided definitions, service ratings, and dielectric strength tests for open-loop controls such as rheostats and auto transformers. It is now out of print and is being revised.

Automatic Station Control, Supervisory and Telemetering Equipments, ASA C37.2-1945, applies to the performance and application of devices intended for electric power supply or conversion.

Electrical Indicating Instruments, C39.1-1951 (NEMA EI 1-1959); *Direct Acting Electrical Recording Instruments, C39.2-1953*; and *Automatic Null-Balancing Electrical Measuring Instruments, C39.4-1956* all cover classifications, definitions, requirements, specifications, and test methods specific to the equipment indicated.

Definitions of Electrical Terms, ASA C42, once a single volume, has been expanded into a series:

- C42.10-1957, *Rotating Machinery*
- C42.15-1958, *Transformers, Regulators, Reactors and Rectifiers*
- C42.20-1956, *Switchgear*
- C42.25-1956, *Control Equipment*
- C42.30-1957, *Instruments, Meters, and Meter Testing*
- C42.35-1957, *Transmission and Distribution*
- C42.40-1956, *Transportation*
- C42.41-1956, *Transportation—Air*
- C42.42-1956, *Transportation—Land*
- C42.43-1956, *Transportation—Marine*
- C42.45-1959, *Electromechanical Devices*
- C42.50-1958, *Electric Welding and Cutting*
- C42.55-1956, *Illuminating Engineering*
- C42.60-1956, *Electrochemistry and Electrometallurgy*
- C42.65-1957, *Communications*
- C42.70-1956, *Electron Devices*
- C42.80-1957, *Electrobiology including Electrotherapeutics*
- C42.85-1956, *Mining*
- C42.95-1957, *Miscellaneous*
- C42.05, *General Terms*, is in preparation under the chairmanship of J. D. Tebo.

Terminology for Transformers, Regulafors, and Reactors, C57.12.80-1958, deals chiefly with the nomenclature of devices and parts.

Sectional Committee X3 on Data Processing Standards, led by H. S. Bright, has a subcommittee responsible for preparing computer nomenclature. It maintains active contact with EIA and with other groups dealing with data processing equipment. Subcommittee X3.6 under V. E. Henriques is concerned with symbols for use in computer flow charts. Subcommittee X3.5 under R. W. Bemer, cooperating with ACM and the International Federation of Information Processing Societies, has developed an 80-column card format and definitions to cover a variety of reference needs. Information on com-

puter data processing available in January, 1961, included 35 source glossaries, about 400 definitions, another 800 terms still to be defined, and some 600 acronym identifications.

Sectional Committee Y14, preparing a Drafting Manual, has a group chaired by R. P. Hoelscher that deals with logic diagrams.

A Proposed Standard for Letter Symbols for Feedback Control Systems, ASA Y10.13, was the result of several years' collaboration between an ASA subcommittee and one from the Feedback Control Systems group of AIEE, and did not seriously conflict with *ASME Std.* 105. Unfortunately, it was necessary to provide definitions for the terms symbolized, and these had not been standardized. As a result, approval of the symbols has been withheld but may follow acceptance of ASA C85.

Graphical Symbols for Fluid Power Diagrams, ASA Y32.10 adopted in 1958, is consistent with the NFPA glossary. Its counterpart in the ASA *Drafting Manual* is Y14.17-1959.

Proposed Graphic Symbols for Logic Diagrams, ASA Y32.14, establishes principles for formation and application of symbols for mathematical and engineering use in digital data processing systems. Definitions of basic binary logical functions are included. The 1960 draft was prepared by representatives from ACM, AIEE, AFCCDD, BuShips, DOD, IRE, and NEMA, under the chairmanship of T. H. Mott, Jr., and has been approved by IRE Committee 21.

Sectional Committee Z39, under the chairmanship of R. E. Kingery, is concerned with library documentation and recently issued ASA Z39.4-1959, *Basic Criteria for Indexes*. One of its subcommittees is studying indexing and coding.

At the suggestion of NEMA and EIA, ASA called an exploratory conference on automation standardization in September 1960. T. E. Veltfort, meeting chairman, was authorized to appoint a small committee which voted in August 1961 to seek a special Standards Council committee to review and redefine, if necessary, the scopes of all committees in the field of "automatic systems".

ACM Association for Computing Machinery, 420 Lexington Ave., New York 17, N.Y.

ACM's monthly journal, *Communications*, Vol. 1 (1958), Nos. 6, 8, 9, 10, and 11, serialized the 24-page *Glossary of Computer Engineering and Programming Technology* from *BRL Report* 1010, dated 1957, by M. H. Weik of Aberdeen Proving Ground. It defines radix mathematics, digital computer circuits and devices, programming techniques, and computer operations. Weik's revision of this glossary appears in *BRL Report* 1115, March 1961.

The Standards Committee, with H. S. Bright as chairman, is making a joint effort with groups in AIEE and IRE in the development of a comprehensive glossary of computer terminology.

DOD Department of Defense, Armed Forces Supply Center Washington 25, D.C.

Many listings in the *Index of Specifications and Standards* contain glossaries which define types and performance of the equipment they cover, and some include graphical symbols. Although full compatibility with industrial practice is not always achieved, they have been coordinated with the work of professional societies, trade associations, and ASA. Typical of such AFSC and ASESA documents are:

MIL-STD-806A (USAF)	*Graphical Symbols for Logic Diagrams*
MIL-STD-682(SigC)	*Flow Chart Symbols for Automatic Data Processing Systems*
MIL-STD-12A	*Abbreviations for Use on Drawings*
MIL-STD-15A	*Electrical and Electronic Symbols*
MIL-E-1	*Specifications on Electron Tubes*
MIL-S-19500	*Specifications on Semiconductor Devices*
MIL-S-20708	*Synchros*

Similar coverage is expected by 1962 for devices such as servomotors, resolvers (data transmitting types, computing types), and tachometer generators.

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

Analog-to-Digital Conversion Equipment, Standards Proposal No. 651, which defines three basic methods and lists essential specifications, has been referred to the EIA General Standards Committee.

Definitions for Numerically Controlled Machine Tools, Including Machine Axis Nomenclature was prepared in 1958 by Committee A-6.1 and includes about 40 items in analog and digital usage. EIA terminology can eventually be expected from committees on Automation Systems, Numerical Machine Tool Control Standards, Continuous Process Control Equipment, Data Transmission Equipment, Storage Media and Language, Computers, and Computer Data Processing.

FCI Fluid Controls Institute 1075 Lincoln Ave. Hamilton, Ohio

Three standards pertaining to actuating devices in fluid systems have been prepared by committees headed by N. Belaef. *FCI* 55-1 classifies power actuated valves and their parts, *FCI* 58-1 provides methods for expressing capacities of self actuating regulators, and *FCI* 58-2 recommends a procedure for testing flow capacity. Standards for solenoid valves and for steam traps are expected in late 1961.

IRE Institute of Radio Engineers, 1 East 79th St. New York 21, N.Y.

The Feedback Controls Committee, G. S. Axelby, Chairman, has published standards on symbols and terminology as *IRE* 26.S1 (*Proc. IRE*, November 1955) and *IRE* 26.S2 (*Proc. IRE*, January 1956). Also, 25 tentative definitions were published in the *IRE-PGAC* Transactions of March 1958. *IRE* 26.S1 defines about 35 generalized terms for signals, paths, transfer functions, and system types. *IRE* 7.S1, *Definitions of Terms Related to Storage Tubes*, 1956, contains 25 items applicable to electron tubes that retain information on a charged surface. A reactivated group met recently to plan to work on control system measurement.

Proposed Standard Definitions, Abbreviations and Symbols for Analog Computers, 60 *IRE* 8.8 *PS1*, covers the functions, component units, and operations in analog computing. Chairman C. D. Morrill has sent the 39-page document to the Electronic Computers Committee, IRE 8, and the Symbols Committee. IRE 21, for review.

ISA Instrument Society of America, 313 Sixth Ave., Pittsburgh 22, Pa.

Instrument Flow Plan Symbols RP 5.1 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 process industries.

Dynamic Response Testing of Process Control Instrumentation, RP 26.1-1957, is a tentative recommended standard for testing, test equipment, and data presentation, prepared by F. H. Winterkamp's Committee *RP*-26. A short illustrative glossary is included. *RP*26.2-1960 and *RP*26.3-1960 provide further details for pneumatic and electric outputs.

The Aerospace Standards Division has a group 8A-*RP* 28, chaired by A. C. Plantz, which has recommended the *AIA Gyro Terminology EETC*-5 as ISA standard. Subcommittee 8A-RP 30, under co-chairmen E. C. Spencer and L. Fleming, is preparing an ISA standard based on *AIA-ARTC Report 16, Glossary of Terms for Flight Test Instrumentation* (1957). A project committee on flow measurement, with R. L. Galley as chairman, is completing the format of tentative *RP* 31.1, *Technology and Specifications for Turbine Type Flow Transducers*. A survey committee 8A-RP 37, with H. H. Norton as chairman, is planning a definitive nomenclature for transducers used in aerospace testing.

IRIG Secretariat, Inter-Range Instrumentation Group, White Sands Missile Range, New Mexico

Telemetry Standards IRIG 106-60 contains a 16-page glossary covering information theory, inter-range operating practices, analog and digital signals, system hardware, and acronyms.

JIC Joint Industry Conference Prod. Engr. Sec., General Motors Corp., 3044 W. Grand Blvd. Detroit 32, Mich.

Hydraulic Standards for Industrial Equipment (1959) supplies specifications for the application of hydraulic apparatus, including controls, used in manufacturing processes. The graphical symbols listed are those of ASA Y32.10.

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

The Industrial Automatic Systems Section, R. W. Shaul, Secretary, has an active Subcommittee on Definitions chaired by R. N. Eck. In the category of feedback control systems, about 90 definitions, some of specific circuit functions, but most covering generalized concepts like those of ASA C85, have been approved as NEMA standards. The committee is now turning its main attention to industrial computer systems.

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

Glossary of Terms for Fluid Power, 2nd Ed., 1960, is an interim document prepared by representatives of hydraulic and pneumatic industries, chaired by W. J. Kudlaty. Its 27 pages collate terms and definitions related to flow and its measurement and to pumps and compressors and their mechanical parts. NFPA's interest in graphical symbols is met by ASA Y14.17-1959 and Y32.10-1958.

SAMA Scientific Apparatus Makers Ass., 370 Lexington Ave., New York 17, N.Y.

Accuracy and Sensitivity Terminology as Applied to *Industrial Instruments, RC*3-12-1955, discusses ways of expressing and measuring the concepts in the title. Brief glossaries in other publications cover chart drives and controller air pressures.

PUBLICATIONS

International

(Remark: The numbers before the titles refer to the Tentative Classification.)

6.9.1 THE PROCEEDINGS OF THE FIRST CONGRESS OF I.F.A.C. ON AUTOMATIC CONTROL, Moscow 1960, have now been published also in Russian language by the Academy of Sciences of the Soviet Union. Copies are available at "International Book", Kuznetsky Most 18, Moscow. The price is 22.72 Roubles for the whole work of 6 volumes. These Proceedings contain all papers and discussions of the Moscow Congress.

6.7 CLASSIFICATION OF AUTOMATIC CONTROL

In Bulletin no. 11 (pp. 37 - 52) we have published a Tentative Classification for the Bibliography of Automatic Control worked out by Dr. B r o i d a, Honorary Editor of I.F.A.C., on the basis of a synthesis of his own previous classification system with that worked out by Dr. A. K l i m e k (Czechoslovakia).
Since then, this classification system has been published in German language by the magazine "Regelungstechnik" (November 1961) and in French language by the magazine "Mesures et Contrôle Industriel" (December 1961). Copies of the Classification in English, German and French may be obtained from the I.F.A.C. Secretary.

6.9.1 Proceedings of the Symposium of the

PROVISIONAL INTERNATIONAL COMPUTATION CENTER

Announced in Bulletin no. 9 (p. 30), these Proceedings are now actually published under the reference: "Symposium on the numerical treatment of ordinary differential equations, integral und integro-differential equations" (in English, French, German and Italian), 679 p., Basel/Stuttgart, Birkhäuser Verlag, 1961.

Canada

6.9.1 PROCEEDINGS OF THE JOINT CONFERENCE OF THE ENGINEERING INSTITUTE OF CANADA AND THE NATIONAL RESEARCH COUNCIL ASSOCIATE COMMITTEE ON AUTOMATIC CONTROL 1961.
Published by the Engineering Institute of Canada, 2050 Mansfield St., Montreal 2, Canada. This publication contains the papers presented at the joint conference held during the Annual General Meeting of the E.I.C., Vancouver, B.C., 1961.

France

6.9.1 ACTES DU PREMIER CONGRES DE L'ASSOCIATION FRANÇAISE DE CALCUL, Grenoble, September 1960. - Proceedings of the First Congress of the French Association of Computation, Grenoble, September 1960 (in French).
488p., 48 NF ($10), Gauthier Villars, Paris, 1961.
(These proceedings announced in Bulletin no. 10, p. 31, are now actually published.)

Germany

2.5 SELF-LEARNING AUTOMATA ("Lernende Automaten") (In German) H. B i l l i n g (Editor), 240 p., 107 ill., 26 DM, R. Oldenbourg Verlag, München.

4.0.1.2 GAS-FILLED TUBES ("Gasentladungsröhren") (In German) N. K i r c h n e r, 122 p., 71 ill., 12,80 DM, R. von Decker's Verlag, Berlin/Bonn/Hamburg, 1961.

4.0.5.2 DATA PROCESSING AND AUTOMATISATION ("Nachrichten-Verarbeitung und Automatisierung") (In German)
H. K a u f m a n n, 50 p., 19 ill., 6,80 DM, R. Oldenbourg Verlag, München, 1961.

5.5.3.1 CONTROL AND INSTRUMENTATION OF NUCLEAR REACTORS, Vol.I ("Regelung und Instrumentierung von Kernreaktoren") (In German) L. M e r z, 454 p., 259 ill., 78 DM, R. Oldenbourg Verlag, München, 1961.

6.7 A.B.C. OF AUTOMATICS ("Automatik A.B.C.") (In German) R. R ö h r, 226 p., 22 DM, R. von Decker's Verlag, Hamburg/Berlin/Bonn, 1961.

Spain

6.9.1 CONGRESO INTERNATIONAL DE AUTOMATICA - ACTAS - International Automation Congress Proceedings. (In English, French and Spanish) Madrid, Instituto de Electricidad y Automatica, 1961, 411 p.
(These Proceedings cover 53 papers with their discussions in course of the Congress held in Madrid on October 13-18, 1958 and on which we have reported in Bulletin no. 3, pp. 18-22)

United Kingdom

1.1.0. COMPUTING METHODS Vol. 1 (Translated from Russian into English). I.S. B e r e z i n, 447 p., 63 s., Pergamon Press, Oxford, 1962.

1.1.0. COMPUTING METHODS Vol. 2 (Translated from Russian into English). I.S. B e r e z i n, 533 p., 70 s., Pergamon Press, Oxford, 1962.

1.1.6.1 AN INTRODUCTION TO INFORMATION THEORY (In English). F.M. R e z a, London, MacGraw-Hill, 1961.

1.1.6.1 THEORY OF THE TRANSMISSION AND PROCESSING OF INFORMATION (Translated from Russian into English). A.G. V i t u s h k i n, 206 p., £ 5/0/0, Pergamon Press, Oxford, 1961.

2.4.1.1 TOPICS IN ENGINEERING LOGICS (In English). Nadler M o r t o n, 230 p., 40 s., Pergamon Press, Oxford, 1962 (issue scheduled for March 1962).

4.0.1.1 ELECTROMECHANICAL COMPONENTS FOR SERVOMECHANISMS (In English). D a v i s and L e d g e r w o o d, London, MacGraw-Hill, 1961.

4.0.1.2 THE NOMOGRAPHIC COMPUTATION OF HIGHLY SATURATED MAGNETIC CIRCUITS (Translated from Hungarian into English). O. B e n e d i k t, 175 p., 5/5s., Pergamon Press, Oxford, 1962.

4.0.5.2 THE THEORY OF MATHEMATICAL MACHINES (Translated from Russian into English). Iu. Ia. B a z i l e v s k i i, 270 p., 60 s., Pergamon Press, Oxford, 1962 (in preparation).

4.0.5.2 ANNUAL REVIEW IN AUTOMATIC PROGRAMMING (In English). R. G o o d m a n (Editor), 394 p., 70 s., Pergamon Press, Oxford, 1961.

5.5.4.0. INTRODUCTION TO THE DYNAMICS OF AUTOMATIC REGULATING OF ELECTRICAL MACHINES (Translated from Russian into English). M.V. M e e r o v, 430pp., 100 s., Pergamon Press, Oxford, 1961.

USA

1.1.6.1 SCIENCE AND INFORMATION THEORY, 2nd Edition (Translated from French into English). L. B r i l l o u i n, 351 p., $ 9.00, Academic Press, New York and London, January 1962.

NOTE ON INFORMATION BULLETIN NO. 13

Information to appear in the Information Bulletin No. 13 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 May 15th, 1962.