

# COURIER CERN



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**EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH**

The European Organization for Nuclear Research (CERN) came into being in 1954 as a co-operative enterprise among European governments in order to regain a first-rank position in nuclear science. At present it is supported by 13 Member States, with contributions according to their national revenues: Austria (1.96%), Belgium (3.85), Denmark (2.09), Federal Republic of Germany (22.86), France (18.66), Greece (0.60), Italy (10.83), Netherlands (3.94), Norway (1.48), Spain (1.68), Sweden (4.25), Switzerland (3.20), United Kingdom (24.60). Contributions for 1964 total 107.2 million Swiss francs.

The character and aims of the Organization are defined in its Convention as follows:

'The Organization shall provide for collaboration among European States in nuclear research of a pure scientific and fundamental character, and in research essentially related thereto. The Organization shall have no concern with work for military requirements and the results of its experimental and theoretical work shall be published or otherwise made generally available.'

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The cover photograph was taken in the CERN Council Chamber on the morning of 10 October 1964, during the speech of welcome by Mr. J.H. Banner, President of the Council, to the Ministers and other guests gathered to commemorate the 10th anniversary of the foundation of the European Organization for Nuclear Research (see page 151). Also on the platform are (in front, left to right) Sir Harry Melville and Mr. J. Willems, Vice-presidents, Prof. V.F. Weisskopf, Director General, Prof. C.F. Powell and Prof. E. Amaldi, members of the Scientific Policy Committee, and (behind, left to right) Dr. M.G.N. Hine, Prof. B. Gregory and Mr. G.H. Hampton, members of the Directorate. Banners representing the flags of CERN's thirteen Member States provide the background to the scene.

## CERN COURIER

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## Last month at CERN

### 10th Anniversary

It was on 29 September 1954 that the Convention establishing the European Organization for Nuclear Research came into force, and the first meeting of the new CERN Council was held just over a week later. To commemorate the tenth anniversary of these events, many of the Government Ministers responsible for CERN in its thirteen Member States, Permanent Representatives or Delegates of the Member States at the International Organizations in Geneva, other senior officials with an interest in the Organization, and members of the Council were entertained at CERN on Saturday 10 October. Their visit is reported more fully in the next few pages.

On 30 October it was the turn of the staff to commemorate the anniversary ('staff', in this sense, including of course the several hundred 'visitors' who are not actually paid by the Organization). Following an invitation from the Director General, Prof. V.F. Weisskopf, they gathered in the Administration Building for celebrations that included a speech by Professor Weisskopf, a reply by Tom Ball on behalf of the personnel, and the consumption of numerous barrels of wine.

The following Monday, 2 November, was declared an official holiday for everyone at CERN.

### Experiments at the PS

At the proton synchrotron during October, the first two weeks of operation (28 September to 11 October) followed the normal pattern, but the second period was extended, as has now become usual preceding a shut-down, to three weeks. The shut-down began on 1 November.

During the first period, various experiments using **spark chambers and electronic counters** were continued in

the South and East experimental halls. In the East hall also, the **1-metre heavy-liquid bubble chamber** of the Lagarrigue group from the **Ecole Polytechnique, Paris**, carried out its last run at CERN for the time being. Part of this was for an experiment designed to give more precise information on the secondary particles emitted from targets bombarded by high-energy protons; the other part, in which pions were directed into a gold target inside the chamber, was to investigate the formation of rho mesons when pions pass near a heavy nucleus. Two new beams were tested. One of these, the **a<sub>7</sub> pion beam** in the North hall, was used later in the month for the first runs of the **pion-proton scattering** experiment being carried out by a joint group from CERN and Ivry. The other, the **b<sub>7</sub> beam** in the South hall, is a neutral-kaon beam for the experiment to investigate further the unexpected **decay of the K<sub>2</sub> meson into two pions**, discovered recently at Brookhaven.

For the first two weeks of the second period, the two **hydrogen bubble chambers** were again running together, with beam-sharing to provide particles also for various other beams for experiments in the South hall. The situation was reversed to some extent in the final week, when the 152-cm chamber received about 10% of the beam (at lower momentum) while the fully accelerated protons were shared between three targets, to give secondary beams for spark-chamber experiments in all three experimental halls.

### German Professor joins CERN

**Prof. Wolfgang Paul**, Professor of Physics at the University of Bonn, joined CERN in October, on a part-time basis until the end of the year. From 1 January 1965 he will be full time and will then become joint Leader of the Nuclear Physics Division with Prof. P. Preiswerk ●

# The European Organization for Nuclear Research celebrates its 10th anniversary

Ten years ago, on 29 September 1954, the Convention came into force for the establishment of a European Organization for Nuclear Research.

To commemorate the tenth anniversary of this event, the Ministers and others who are responsible for the Organization in their respective Member States were invited to spend a day at the laboratory at Meyrin, Geneva, to hear reports of the progress that has been made in the past ten years and of plans for the future and to see for themselves the equipment, and some of the people, over which they ultimately have command.

Ministers or their representatives, other Government officials and members of the CERN Council, from all the Member States, accepted the invitation\* and were greeted in the Administration Building on the morning of Saturday, 10 October, 1964, by the President of the Council, Mr. J.H. Bannier, and the Director General, Prof. V. F. Weisskopf.

After a speech of welcome by Mr. Bannier, the guests heard two discourses by members of CERN's Scientific Policy Committee: Prof. C. F. Powell, speaking on 'The role of pure science in European civilization', and Prof. E. Amaldi, on 'The future of European scientific co-operation'.\*\* At about 12.30, aperitives were served in the Staff restaurant and the press representatives who had also accepted an invitation to be present had an opportunity to talk to the Ministers, Council members and speakers. This was followed by lunch, the Ministers and other guests being seated at two long tables specially set up in the coffee lounge. There was no pre-arranged seating plan, as Mr. Bannier explained, in order to give as much freedom as possible for personal contact and discussion of mutual problems over lunch.

In the afternoon, the members of the Directorate, the Division leaders and other senior members of

\* See list on pp. 154-155.

\*\* A summary of Mr. Bannier's speech appears on the following page; we hope to issue the texts of all three talks as a supplement to our December issue.

Today's President of the Council, Mr. J.H. Bannier (left), and Director General, Prof. V.F. Weisskopf (centre), talk with the man who, in a sense, was the first Head of CERN: Prof. Pierre Auger, now Director General of the European Space Research Organization. In 1951, it was Prof. Auger who, as Director of UNESCO's Department of Natural Sciences, was responsible for setting up the Board of Consultants that decided the aims and scope of the future European laboratory. Mr. Bannier has also been involved with CERN since its earliest days and has been Netherlands Delegate to Council since the first meeting in 1954.

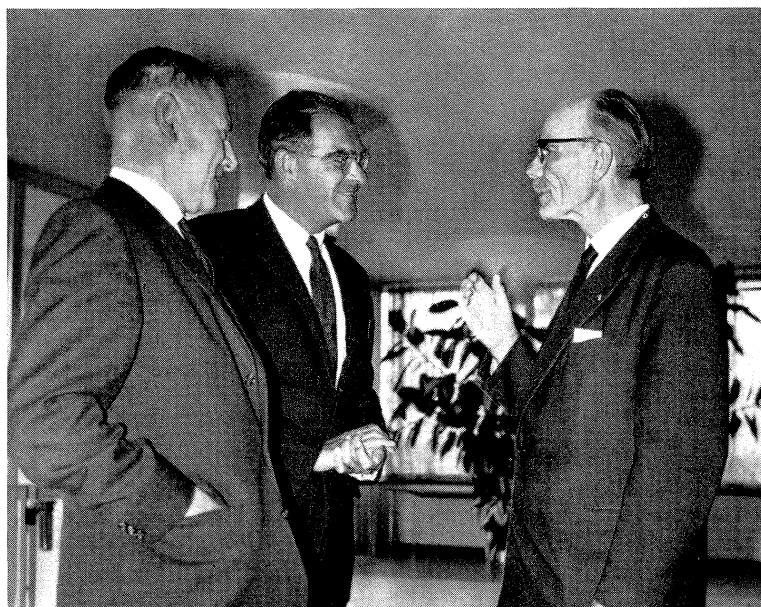
CERN joined a dozen or so members of the personnel drawn from the Public Information Office's panel of Saturday guides to show the visitors around the Laboratory, in groups according to nationality. Among the sections visited were the East target area of the proton synchrotron, the East experimental hall, the CERN 2-m bubble chamber, the PS main control room and the South experimental hall, CESAR (the electron storage-ring model), the IBM 7090 computer and the scanning table for pictures from the 2-m bubble chamber.

Finally everyone gathered again in the coffee lounge for further refreshments and a short closing speech by Prof. Weisskopf. In this he thanked not only the participants at the day's proceedings for the interest they show, through CERN, in fundamental science in Europe but also all those to whom CERN owes its success, especially the Swiss Confederation and Geneva, for their hospitality to the Organization, and France, for permitting it to extend its boundaries.

Mr. H. P. Tschudi, Vice-president of the Swiss Federal Council, then replied for the guests, thanking the President of the CERN Council, its Members, the Director General and his staff for what the visitors had been able to learn during the day about the achievements of the Organization and its hopes for the future. In particular, Mr. Tschudi acknowledged the friendly words addressed to his country by the Director General.

Unfortunately, rain throughout the day had prevented CERN's guests from seeing the Organization and its setting under the best conditions, but all seemed to have found their visit interesting and many were heard to agree that it had been well worth while.

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## Why the 29 September?

Although ideas had been circulating among scientists and diplomats for about two years previously, the history of CERN is generally considered to begin with the message from the French physicist Louis de Broglie, delivered to the European Cultural Conference called by the European Movement in Lausanne in December 1949. In this message he proposed the creation in Europe of an international research institution to be equipped on a financial scale transcending the individual possibilities of the member nations. The following June, at the General Conference of the United Nations Educational Scientific and Cultural Organization (UNESCO), held in Florence, a resolution by Prof. I. I. Rabi, of Columbia University, U. S. A., was adopted authorizing the Director General to assist and encourage the formation of such research centres and laboratories. In December a 'Commission for Scientific Co-operation' met in Geneva under the auspices of the European Cultural Centre (founded by the Lausanne meeting of 1949), and the idea of building a large particle accelerator for high-energy physics research was first explicitly put forward.

Under the leadership of Prof. Pierre Auger, then UNESCO's Director of Natural Sciences, consultants were chosen, in their personal capacities, from many parts of Europe, and as a result of their recommendations a conference of Governmental delegates was called by UNESCO in December 1951. This was followed by a further meeting on 15 February 1952, in Geneva, at which an agreement was signed by representatives of eleven nations, constituting a 'Council of Representatives of European States for planning an International Laboratory and organizing other forms of co-operation in Nuclear Research'. This body soon became known as the 'European

Council for Nuclear Research' and abbreviated, from the initials of the French version, to 'CERN'.

By March 1953, the various groups operating under the Council, still in different parts of Europe, had a total staff of about 70, and at its sixth meeting, in Paris from 29 June to 1 July, the Council had before it the Convention for the establishment of a 'European Organization for Nuclear Research'.

This Convention was signed by the representatives of twelve States, but could come into effect only when ratified by seven of them, including Switzerland (on whose territory it had been finally decided to locate the new laboratory), with a combined financial share of at least seventy-five per cent. Confident in the success of CERN (as the new Organization would continue to be called), planning continued, and work was even begun on site excavations in May 1954. By July, the Convention had been ratified by the United Kingdom, Switzerland, Denmark, the Netherlands, Greece, Sweden and Belgium, but the required total of contributions was still wanting.

On 29 September, 1954, however, instruments of ratification were deposited by France and the Federal Republic of Germany, and it then only needed specific action to put the Convention into effect. This day is thus marked as that on which CERN was founded.

Before the first meeting of the new Council of the Organization, on 8-9 October 1954, the Convention had been ratified also by Norway, and early in 1955 Yugoslavia and Italy followed suit. Austria became a member of the Organization in 1959 and Spain at the beginning of 1961. Yugoslavia formally withdrew in 1962, but retains the status of observer, together with Poland and Turkey.

## Points from Mr. Bannier's speech

Mr. Bannier's formal speech of welcome, in the Council Chamber, began with a particular mention of the representatives of other international organizations present and the reading of a message of congratulation on the anniversary from the Director General of UNESCO, Mr. René Maheu. To the Ministers he said :

"You are the real members of Council... It was you and your predecessors who had the courage and the imagination to create CERN at a time when only a handful of enlightened scientists ... had an idea, and that not very precise, of what this new laboratory would mean and what could be achieved there."

After speaking of his own long connexion with CERN and of the role of the Council members, he pointed out that they each considered CERN as a part of their own country.

"It must be obvious to you all", he went on, "that you are today on a part of your own territory and everything around you represents some of the scientific potential and spirit of your own country."

Mr. Bannier then explained that the commemoration of the 10th anniversary of the coming into force of the Convention was only one of the reasons for inviting the Ministers to CERN. There were many other important dates that could also have been commemorated, but this meeting was really looking towards the future :

"CERN has reached a stage of the greatest importance, a stage where it is no longer sufficient to look at the past with a certain satisfaction and be pleased with all that has been achieved and can be achieved at the present moment. We are now at a stage where we must look closely at the problems that the future holds for us.

"What steps must be taken to enable CERN in the future to remain a flourishing institution producing important scientific results ?

"What must we do so that in the course of the next decade Europe may continue to play a major part in that most fundamental field of science, high-energy physics ?



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Prof. V.F. Weisskopf (left) talks with Mr. Albert Picot, of Geneva, who in 1952-53, as Councillor of State responsible for the Canton's Department of Public Instruction, played a leading part in bringing CERN to Geneva and who was for many years one of the Swiss Delegates to Council.



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Other members of the Swiss party photographed during their visit to the proton synchrotron. Left to right are Mr. A. Chavanne, Mr. H.P. Tschudi, Mr. R. Helg and Prof. P. Scherrer. Mr. Chavanne is now the Councillor responsible for the Department of Public Instruction in Geneva and Prof. Scherrer has been associated with CERN from its earliest years, being a Swiss Delegate to the Council many times and a member of the Scientific Policy Committee since its formation ten years ago.

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CERN/PI 85.10.64



The French party, seen here in the main control room of the proton synchrotron, was one of the largest. In the foreground are (right to left) Prof B. Gregory, CERN's Directorate Member for Research, talking to Mr. M. Habib Deloncle, Prof. J. Teillac, Dr. C. Germain, from CERN's Nuclear Physics Apparatus Division, and Mr. M. Lennuyeux-Cournene. Visible between the last two is Prof. L. Kowarski, now on leave from CERN at Purdue University, U.S.A., who was one of the first to discuss the idea of a European scientific organization, and became one of the original members of the Board of Consultants.



The British party, also photographed in the PS main control room, included (left to right) Sir Richard Clarke, Mr. C.P. Scott, Mr. H.L. Verry, Dr. Porter, Mr. Brook and the Earl of Bessborough. On the right, E. Ratcliffe (CERN PS Division) is explaining the operation of the synchrotron, and between him and Lord Bessborough can be seen Dr. M.G.N. Hine, CERN's Directorate Member for Applied Physics, another member of the staff who was already in Geneva in 1954. Mr. Verry played an important part for many years as an Advisor to the British Delegation to CERN Council.

"How can the international co-operation that has been such a success at CERN be developed to the advantage of our Continent and of the whole world ?

"What role will modern science play in the civilization of tomorrow and the days after ? And what means will be required for Europe to take its rightful place and to carry into effect what the world demands of it ?"

Some of the replies that could be given to these questions, Mr. Bannier continued, would require decisions whose consequences would be much greater and whose influence, on a world scale, would be much wider than those arising from the decisions taken 10 or 12 years ago ●

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Prof. K. Wolf (right) and Dr. H.C. Korff (centre), from the Federal Republic of Germany, are seen here with Dr. A. Schoch, of CERN, who was already working with the Organization in Geneva ten years ago and is at present leader of the Accelerator Research Division.



# LIST OF GUESTS

## MEMBER STATES

### AUSTRIA

- Dr. E. Treu**  
Ambassador and Permanent Representative,  
representing the Minister of Education  
Council Delegate
- Dr. O. Drischel**  
Ministry of Education
- Dr. H. Gleissner**  
Deputy Permanent Representative
- Prof. W. Thiring**  
Council Delegate

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Vice-president of Council  
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Consul General and Deputy Permanent  
Representative

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- Miss A. Vøhtz**  
Permanent Secretary, Ministry of Education
- Prof. J.K. Bøggild**  
Council Delegate
- Mr. O. Obling**  
Council Delegate

### FEDERAL REPUBLIC OF GERMANY

- Prof. K. Wolf**  
Director of the 'Nuclear Research' Department  
of the Federal Ministry for Scientific  
Research
- Dr. H.C. Korff**  
Director of the 'Federal Budget' Department  
of the Ministry of Finance
- Mr. P. Schoenfeld**  
representing the Permanent Delegate
- Dr. W. Schulte-Meermann**  
Council Delegate
- Prof. W. Jentschke**  
Council Delegate  
Member of the Scientific Policy Committee

### FRANCE

- Mr. M. Habib-Deloncle**  
Secretary of State for Foreign Affairs
- Mr. M. Lennuyeux-Cournene**  
Secretary at the Embassy, representing the  
Permanent Representative
- Mr. L. Lanier**  
Secretary General of the General Delegation  
for Scientific Research and Development
- Prof. A. Berthelot**  
Saclay
- Prof. J. Teillac**  
Orsay
- Mr. J. Martin**  
Council Delegate
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Ministry of Foreign Affairs
- Prof. L. Leprince-Ringuet**  
Chairman of the Scientific Policy Committee

### GREECE

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Minister for Industry
- Mr. Sakellaris**  
Greek Atomic Energy Commission
- Prof. Th. Kanellopoulos**  
Scientific Director, Greek Atomic Energy  
Commission
- Mr. A. Petropoulos**  
representing the Permanent Delegate
- Prof. T.G. Kouyoumzelis**  
Council Delegate

### ITALY

- Mr. C. Arnaudi**  
Minister for the Co-ordination of Scientific  
Research and Technology
- Mr. Licastri**  
Private Secretary to Mr. Arnaudi
- Prof. C. Salvetti**  
Vice-president of the C.N.E.N.
- Mr. B. Fenzi**  
Permanent Representative, ad interim
- Prof. E. Amaldi**  
Council Delegate  
Member of the Scientific Policy Committee

### NETHERLANDS

- Mr. Th. H. Bot**  
Minister of Education, Arts and Sciences
- Mr. J. Nitte**  
Ministry of Education, Arts and Sciences
- Prof. J.H. de Boer**  
President of the Netherlands Council for  
Nuclear Energy
- Dr. J. Kaufmann**  
Permanent Delegate
- Mr. J.H. Bannier**  
President of Council
- Prof. S.A. Wouthuysen**  
Council Delegate  
Member of the Scientific Policy Committee

### NORWAY

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- Mr. S.C. Sommerfelt**  
Ambassador and Permanent Representative  
Council Delegate
- Prof. B. Trumpy**  
Council Delegate

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Permanent Delegate, representing  
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- Mr. J.R. Herrero Fontana**  
Director General of the Budget, Ministry of  
Finance
- Prof. C. Sánchez del Río**  
representing the Minister for Industry
- Prof. J.M. Otero Navascués**  
Council Delegate

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- Mr. S. Moberg**  
Secretary of State, Ministry of Education
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Chairman of the Finance Committee

### SWITZERLAND

- Mr. H.P. Tschudi**  
Vice-president of the Federal Council
- Mr. R. Hartmann**  
representing **Mr. J. Burckhardt**, Head of the  
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Department of Foreign Affairs
- Mr. J.P. Galland**  
Chancellor of State
- Mr. E. Ganter**  
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- Mr. A. Chavanne**  
Geneva State Councillor  
Council Delegate
- Mr. A. Picot**  
former President of the Geneva State Council
- Prof. P. Scherrer**

### UNITED KINGDOM

- The Earl of Bessborough**  
Joint Parliamentary Under-secretary of State,  
Department of Education and Science
- Sir Richard Clarke**  
Second Secretary, H M. Treasury
- Mr. Brook**  
Private Secretary to the Earl of Bessborough
- Mr. C.P. Scott**  
Permanent Representative
- Sir Harry Melville**  
Vice-president of Council
- Dr. Proctor**  
Private Secretary to Sir Harry Melville
- Dr. J.B. Adams**  
Council Delegate  
Member of the Scientific Policy Committee
- Prof. C.F. Powell**  
Member of the Scientific Policy Committee
- Mr. H.L. Verry**

Some of the Italian guests :  
(left to right) Mr. B. Fenzi,  
Mr. C. Arnaudi, Prof. C. Salvetti  
and Prof. E. Amaldi in the  
foyer outside the Auditorium.  
Prof. Amaldi, was among  
the small group who took up  
the idea of CERN more than  
fifteen years ago and became  
Secretary General of the original  
'Council' in 1952. As an  
Italian Delegate to the CERN  
Council and Member of the  
Scientific Policy Committee he  
has continued to play an  
important part in the development  
of the Organization, and is at  
present also chairman of the  
European Committee on Future  
Accelerators.



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#### OBSERVER STATES

##### TURKEY

**Mr. H. Fahir Alaçam**  
Permanent Representative

##### YUGOSLAVIA

**Mr. St. Kopicok**  
Ambassador and Permanent Representative

#### OTHER INTERNATIONAL ORGANIZATIONS AND LABORATORIES

**Prof. P. Auger**  
Director General of E.S.R.O.

**Mr. J. Powers**  
U.N.O.

**Mr. F. Blanchard**  
Deputy Director of the I.L.O.

**Dr. M. Kaplan**  
W.H.O.

**Dr. M.B. Sarwate**  
Deputy Secretary General of the I.T.U.



CERN/PI 119.10.64

In the foreground of this photograph of the Netherlands party, taken inside the ring tunnel of the proton synchrotron are (left to right) Prof. J.H. de Boer, Mr. Th. H. Bot, Dr. C.J. Zilverschoon (CERN Accelerator Research Division) and Prof. S.A. Wouthuysen. Just visible on the left is Dr. J. Kaufmann while Mr. J. Nittel can be seen in the centre behind Prof. de Boer. Dr. Zilverschoon, who is now playing a leading part in the design studies for a 300-GeV accelerator, became interested in CERN while still working in Amsterdam with the late Prof. C.J. Bakker, and came to Geneva just over ten years ago. Prof. de Boer also has had a long association with the Organization, being already a Delegate to the Council in 1954.



## In Memoriam

# Antonio STANGHELLINI

Professor Antonio Stanghellini died in Bologna on 29 September, 1964, after a short but painful illness.

Born in 1931, he completed his studies at the University of Bologna in 1954 and then began his research career under Prof. G. Puppi, with whom he published his first paper. This, a phenomenological study of the application of dispersion relations to the problem of pion-nucleon scattering, attracted a good deal of attention at the time.

Coming to CERN, as a Fellow, in 1958, he began working on the physics of low-energy pions. In particular, he proposed an experimental test for charge-independence and studied a model for pion-hyperon interactions in the framework of global symmetry.

He then returned to Bologna, where he was a lecturer and where, in spite of his youth, he greatly influenced the organization of the theory group in the Institute of Physics at the University. During this time his work concerned mainly the nucleon form factors.

In 1960 Antonio Stanghellini was offered a post as staff member in the CERN Theoretical Studies Division. This he accepted, and thus began a most fruitful collaboration with the Division and with CERN as a whole. During this time he published a series of important contributions to the physics of high energies, including, for example, the multiperipheral model, which is a theory that enables certain fundamental properties of high-energy processes to be recognized and understood. At the Sienna Conference in 1963, A. Stanghellini, by then a world-renowned authority

in his field, was responsible for the rapporteur's report on high-energy interactions.

His contacts with various experimental groups at CERN were frequent and of benefit to the whole laboratory. Here in particular, his training as a phenomenologist enabled him to understand the problems of experimental physics and in every case to find the right means of expression.

Then, in the autumn of 1963 he was selected from among competitors all over Italy for a university chair of theoretical physics, and received the title of Professor of Theoretical Physics from the University of Bologna. Tragically, the illness from which he was not to recover soon obliged him to interrupt his teaching, although right to the end he took part in the organization of the group that he would have led and talked physics with his colleagues and numerous friends.

His memory will live on among all those who had the good fortune to know him. Antonio was not only a brilliant and discerning physicist, with whom discussion was always fruitful, but also an extremely human scientist who came to all problems with an open mind. He was for many of us also a wonderful friend. His passing is a very great loss to the whole of physics and to CERN in particular.

He leaves behind a young wife with two children. On behalf of everyone at CERN we extend to her our profound sympathy and this expression of our extreme sadness.

**D. Amati J. Prentki**

# The 1964 Easter School

## for physicists using the CERN proton synchrotron and synchro-cyclotron

Herceg Novi

18-31 May, 1964

As the number of European physicists wishing to use the facilities provided by CERN has grown, so the problem of providing adequate training for them in modern high-energy physics has assumed increasing importance. The young physicists who come to CERN, either as staff members or for an extended stay as visitors, are of course well catered for by the regular courses and symposia provided by senior CERN staff. Many other physicists, however, from Member States and even from elsewhere, use experimental material such as nuclear emulsions or bubble-chamber film from exposures at one of the CERN accelerators but can rarely come to CERN — certainly not for periods long enough to be able to benefit from the lectures provided there. A few, coming from universities where there is a large staff capable of providing extensive courses in high-energy and nuclear physics, are able to get adequate training in their own laboratories, but in most cases such courses as they are able to attend are not quite as advanced as those provided at CERN.

For the benefit of young research workers like these using nuclear emulsions, the CERN Emulsion Experiments Committee decided to organize a two-weeks school for emulsion physicists, which was held around Easter 1962. This first school was so successful

that a further one was arranged for the following Easter. At the first school the course was devoted largely to technical problems of particular interest to users of the emulsion technique (see *CERN COURIER*, vol. 2, p. 10, May 1962). For the second, on the other hand, the emphasis was shifted, to embrace wider problems of high-energy physics (*CERN COURIER*, vol. 3, p. 67, May 1963). Both these schools were held at St. Cergue in the Swiss Jura. For the third school an invitation was received from the Yugoslav Federal Nuclear Commission for it to take place at their Nuclear Centre in the little town of Herceg Novi on the Montenegrin coast. The Commission also generously offered to provide hospitality for a certain number of the lecturers at the school. This kind invitation, which was conveyed to the Emulsion Experiments Committee by Dr. Mira Juric of Belgrade University, was accepted and as a result the school was organized under the joint auspices of CERN and the Yugoslav Nuclear Energy Commission. The Organizing Committee consisted of Dr. W.O. Lock (chairman), Dr. R. Armenteros, Dr. J.C. Combe, Dr. M. Nikolic, Prof. L. Van Hove and Miss E.W.D. Steel (secretary) from CERN, Dr. M. Juric from Belgrade, and Prof. E.H.S. Burhop from London, as a member of the Emulsion Experiments Committee.

The Organizing Committee decided, in the light of experience with the 1963 school at St. Cergue, that the programme should again deal mainly with the wider problems of high-energy physics. Consequently there was no reason to limit the participants to emulsion physicists and an invitation was accorded also to those using bubble-chamber films. Another change from the previous years was that, on the advice of the Yugoslav hosts, the date was fixed for the period of 18-31 May, 1964.

The school was particularly fortunate in its choice of lecturers. Dr. M. Veltman, Dr. C. Rubbia and Prof. L. Van Hove dealt with weak interactions, Prof. R.H. Dalitz, Dr. R. Armenteros and Prof. C. Peyrou covered resonances, Prof. C. Franzinetti lectured on neutrino physics, Prof. E.H.S. Burhop dealt with hyperfragments, Dr. J.C. Combe described some magnetic-moment experiments and Dr. G. Costa discussed elementary particles. Several afternoon sessions were devoted to specialized problems of data assessment and interpretation, under Drs. L. Jauneau, D. Morellet, W. Koch, B. Ronne and O. Skjeggstad.

The school was attended by 120 students from 24 countries, including 12 of the Member States of CERN. Fifteen high-energy and nuclear physicists from Yugoslavia took part in the school and a number of

Photo : A. Mistic, 'Politika', Belgrade



In this photograph, taken at a press conference to mark the end of the Easter School, Prof. Burhop is third from the left, with Prof. C. Franzinetti, of CERN, on his left and Dr. S. Nakicenovic on his right. Nearest to the camera is Prof. L. Van Hove, leader of CERN's Theoretical Studies Division.



others, including the Directors of the country's main research institutes, came down for the last day's sessions. At these some of the outstanding problems of high-energy physics were discussed, the topics including recent experimental work and proposals for future accelerators that would enable further advances to be made.

The high quality of the lectures was matched by the level of enthusiasm and the seriousness of the students, and on most nights many of them could be seen in the auditorium still at work with Dr. Veltman or some other lecturer discussing the intricacies of spin sums or  $\gamma_5$ . Indeed these informal tutorial classes, made possible by the willingness with which several of the lecturers gave freely of their spare time to conduct them, represent one of the innovations on this occasion which will certainly be repeated at future schools of this kind.

Another of the factors that contributed markedly to the success of the school was the availability in advance of background articles prepared by many of the lecturers. This allowed the students to come adequately prepared to take full advantage of the lectures and discussions. Great credit is due to Dr. Nikolic for suggesting and organizing the preparation of these background articles, to Prof. Van Hove for carefully reading and vetting them, and of course above all to the lecturers who actually wrote them.

Success was further ensured by the location of the school, on the shore of one of the most beautiful harbours in Europe or, indeed, in the whole world.

The detailed organizational arrangements on the part of CERN were once again in the capable hands of the indefatigable Miss E.W.D. Steel and Miss Y. Henry in

the CERN Scientific Conference Secretariat. During the whole of the school Miss Steel was labouring under the handicap of a broken wrist and was often in physical pain. This did not, however, prevent her from being present to welcome every participant on arrival and to say goodbye to them on leaving, even at 5.30 in the morning !

The school's Yugoslav hosts also spared no effort to make it a success. Dr. S. Nakicenovic, Under-secretary of State and Secretary of the Yugoslav Federal Nuclear Energy Commission, an old friend of CERN, personally made two visits to the school with Prof. Barbaric, head of the section for fundamental research, and several other members of the Commission. The Mayor and other civic dignitaries of Herceg Novi paid a visit to welcome the students just before the opening session and were welcome guests at the dinner offered by CERN to mark the end of the school. Unfortunately this latter occasion was preceded by an electrical storm, the like of which few of the visitors had seen before, and the Mayor himself, already drenched through by the rain, was prevented from attending the dinner by floods which blocked the road.

The same storm also precluded the participants at the school from seeing a display of Montenegrin folk dances which had been kindly arranged by their hosts.

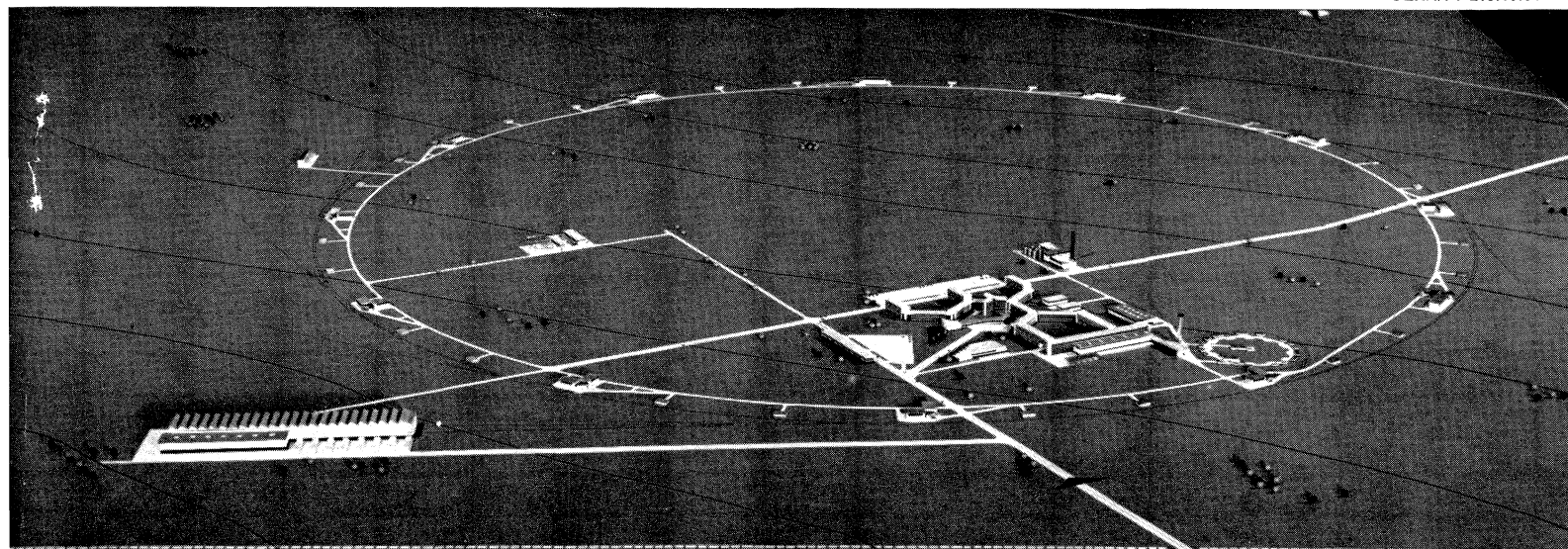
However, most of the students were able to visit the beautiful and interesting places in the vicinity and to absorb some of the local culture. Of particular interest were the excursions to Dubrovnik, to Kotor and Budva, and to the nearby monastery of Sveti Sava.

A questionnaire distributed to the students and returned by them at the end of the school resulted in

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CERN's Site and Buildings Division has recently produced this model of a possible layout for a new 300-GeV accelerator and its associated laboratories and offices. The accelerator itself, with a diameter of 2.4 km, is underground and marked by the twin black circles. External beams would follow the straight-line paths that leave the ring at various points. More clearly visible are the circular service roads inside both the main accelerator ring and the booster synchrotron ring, the central building complex and the experimental hall, 400-m long, at the end of one of the beam paths.

CERN/PI 218.10.64



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a useful indication of the features that had been found most useful, and the answers provide a guide for the organizers of similar schools in the future. The tutorial classes and the issuing of typed notes in advance were most appreciated, while the lectures on theoretical topics were generally found of more value than those on experimental subjects. Among the criticisms voiced was one that the surroundings were too beautiful, so that students were distracted from the work of the school, and the complaint (apparently from a male participant) that there were too few girls!

This year's school set a very high standard indeed. It is expected that the process of broadening the membership of the school to include all techniques will reach its ultimate extent next year when the students will be drawn from those using emulsions, bubble chambers, spark chambers, and counters. It is a cause for justifiable pride for the Emulsion Experiments Committee and its energetic former secretary, Dr. W.O. Lock, that they should have been responsible for initiating a very worthwhile activity that will, it seems, long continue as another of the services organized by CERN for the benefit of young European physicists.

**E.H.S. Burhop**

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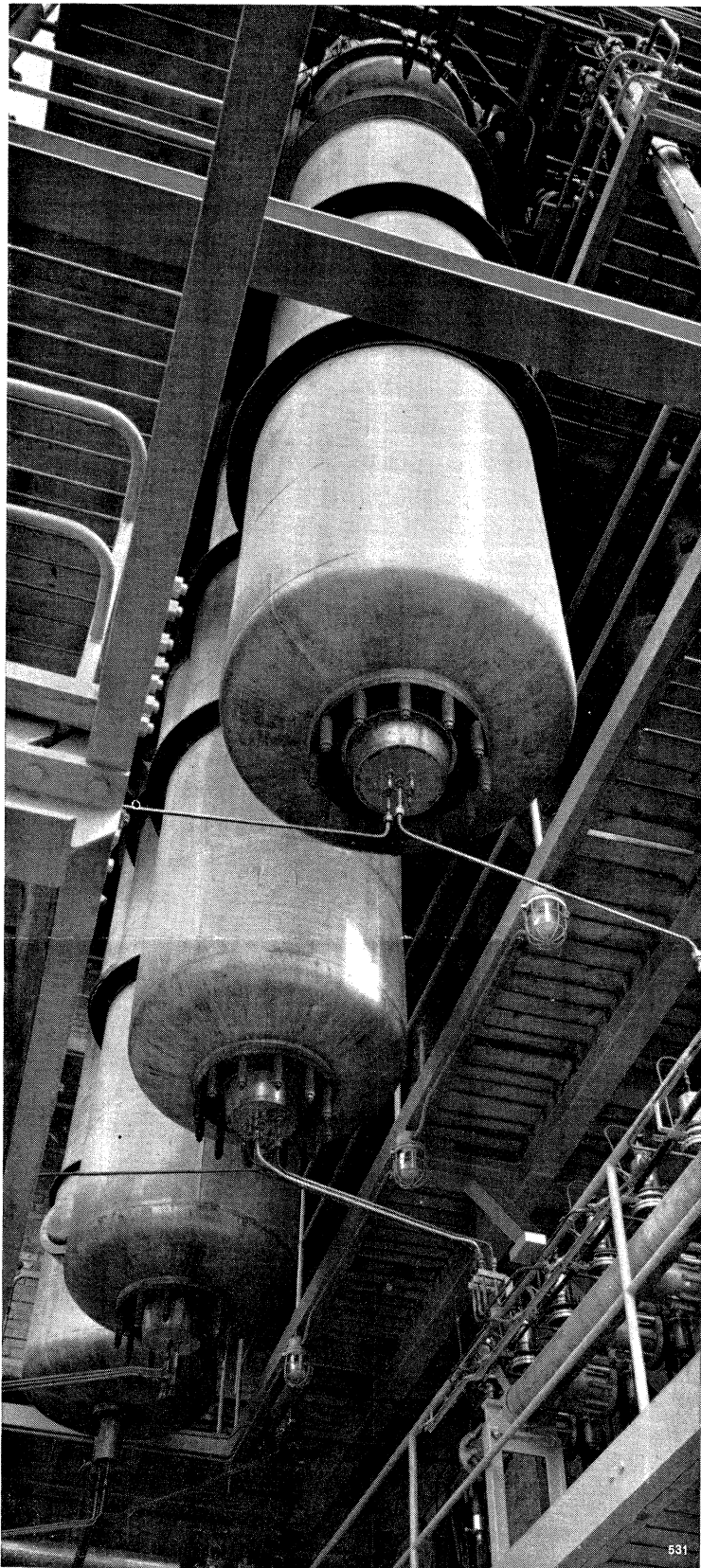
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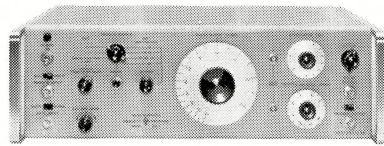
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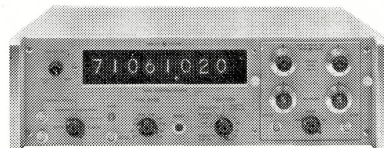
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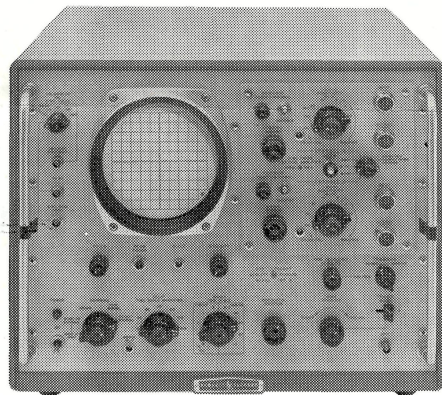
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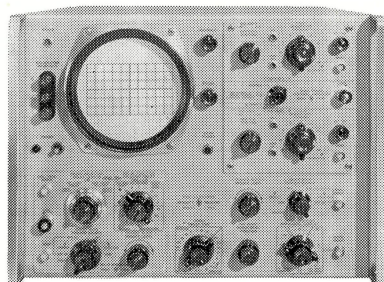
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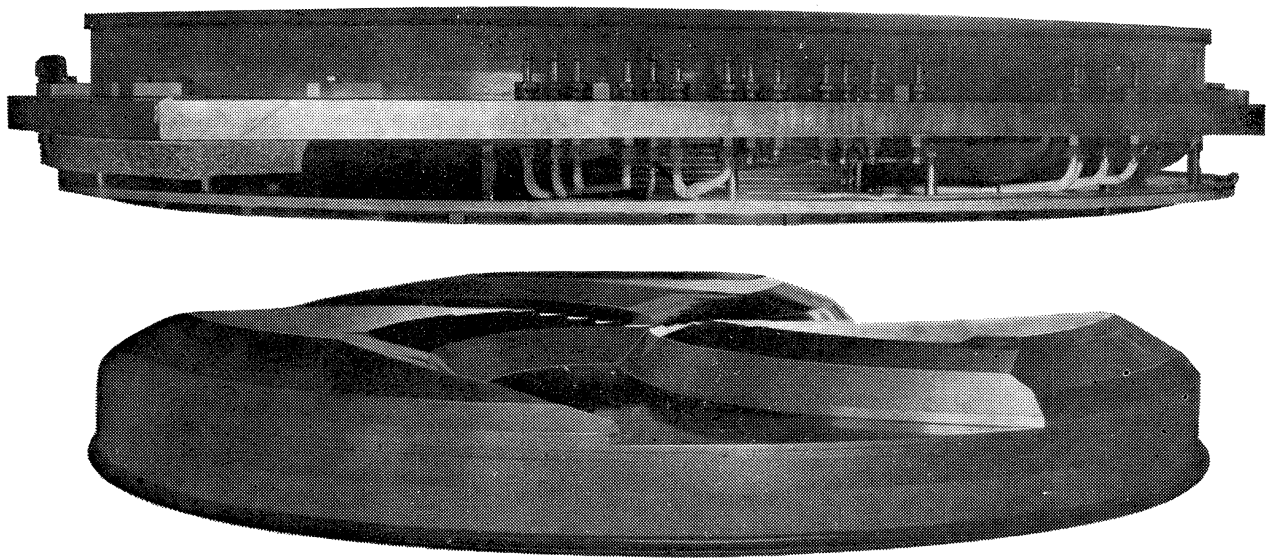
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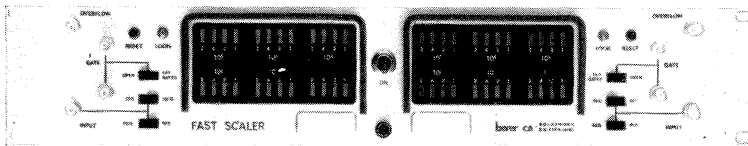
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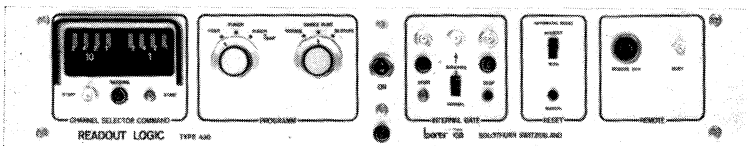
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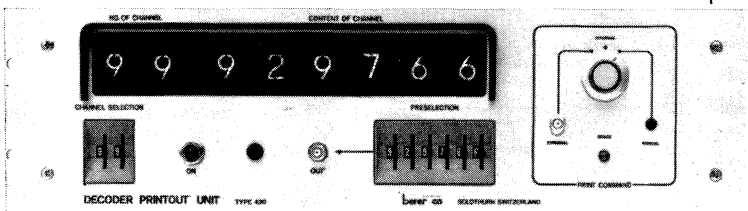
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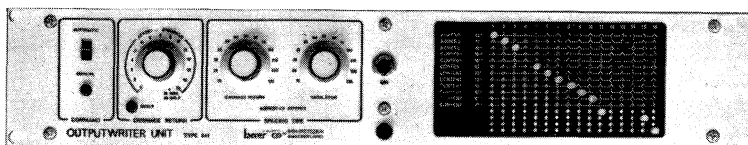
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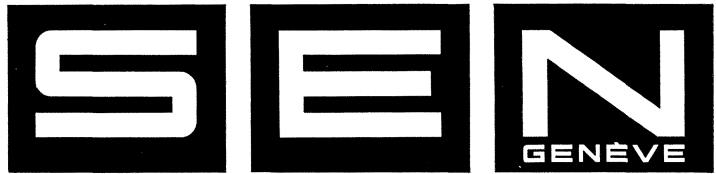
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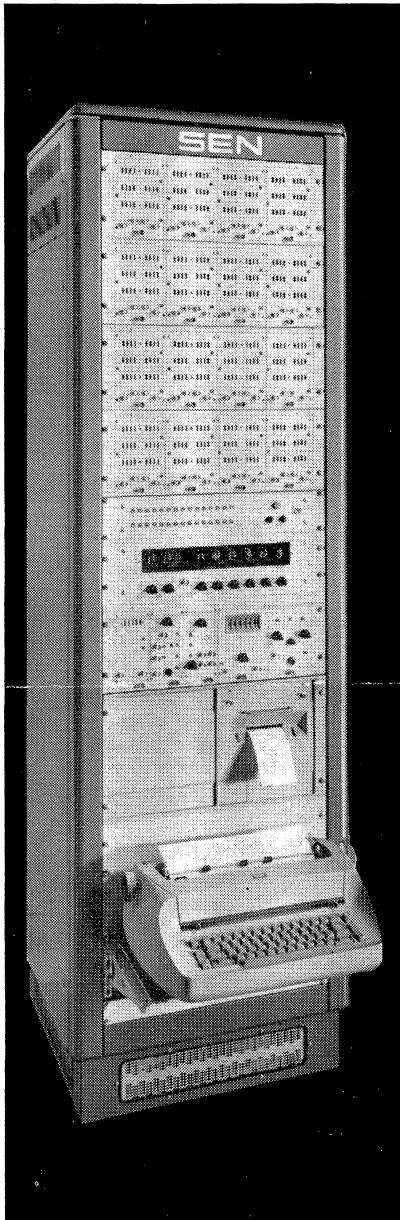
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