

People and things

* *In our December issue we shall cover the award of this year's Nobel Prize for Physics to Sheldon Glashow, Steven Weinberg and Abdus Salam.*

compelling because the low energy of the reactor antineutrinos means that only a single coupling constant is involved. (In high energy neutrino interactions at accelerators, there are in general four coupling constants, corresponding to left- and right-handed couplings to both up and down quarks.) Because this coupling constant does not depend on the weak mixing angle, the experiment confirms the Weinberg-Salam prediction but does not determine the mixing angle.

The experiment is being continued to improve the statistics.

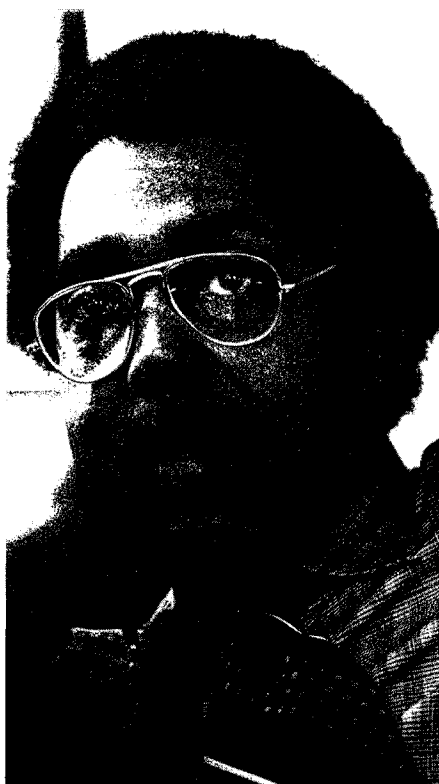
On people

Andy Sessler has announced his intention to resign as Director of the Lawrence Berkeley Laboratory as from the beginning of next year. He has guided the Laboratory through a period of great change when diversification and the swing to many energy and environmental areas of research have been implemented with success.

In his letters to President David Saxon of the University of California and to Berkeley staff, Andy Sessler raised several reasons for handing over leadership. He wishes to return to research and, in particular, to contribute creatively to the vital area of fusion energy. He believes that it is good to change Director after a seven-year period — allowing adequate time for objectives to be attained and yet providing for change

when change is most likely to be needed. He also regretted that the focus of interaction with the Department of Energy during his years of office had been on "procedural matters and on a severe constraint on the utilization of the Laboratory rather than on a mutually supportive exploration of the ways this excellent institution can be more fully utilized to work on the nation's critical energy problems."

Also at the Lawrence Berkeley Laboratory, Hermann Gruner has succeeded Ed Lofgren as Head of the Accelerator and Fusion Research Division. In recent years, Hermann Gruner has led the Bevalac work accelerating heavy ions in the accelerator combination of the Bevatron and SuperHILAC. For many years, Ed Lofgren has been one of the leading physicists in the accelerator field.



1. *Walter Massey, new Director of the Argonne National Laboratory.*
2. *Andy Sessler, resigning Director of the Lawrence Berkeley Laboratory.*



2.

Bjorn Wiik, new Chairman of the CERN SPS Experiments Committee.



Bill Walkinshaw, applied theoretical physicist from the Rutherford Laboratory, retired on 16 August. He had played an important part in the history of the Laboratory, having been involved in the design of the Proton Linear Accelerator and of the Nimrod synchrotron. In more recent years he moved to computing and built up at Rutherford one of the largest scientific computing centres in Europe.

It is sad to record the death on 27 September of Otto Frisch. He is best known in physics for his participation in the discovery of nuclear fission, and it was he who gave the phenomenon its name. A highly cultured man — artist, musician, witty and articulate conversationalist — he was of a school no longer around in large numbers.

Giuseppe Cocconi's 65th birthday was celebrated by his friends at CERN on 3 October. Friends he has in large numbers because of his involvement in particle physics and astrophysics and because of his warm personality.

Committee changes: at CERN, Bjorn Wiik has succeeded Ian Butterworth as Chairman of the SPS Committee. At Fermilab, John Rutherford has succeeded Frank

Sciulli as Chairman of the Users Executive Committee.

On 12 September, Giuseppe Occhialini received the 1979 Wolf Prize for Physics in a ceremony held at the Knesset, Jerusalem, in the presence of the President of Israel. The prize was awarded for two major discoveries — electron – positron pair production (at Cambridge in 1933 in collaboration with P.M.S. Blackett) and detection of the pion (at Bristol in 1948, together with C.F. Powell). These two discoveries were fundamental steps in the development of elementary particle physics and have led to the award of two Nobel Prizes. Since 1930, Occhialini has played an important role in the development of physics in Italy. In 1950 he was among the founders of INFN — the National Institute for Nuclear Physics — promoting in particular the creation of the Groups for Elementary Particle Physics of the INFN Sections at Genoa and Milan. In addition, he was in the 1960s the Director of the INFN Section at Milan. The Wolf Prize, which is considered one of the most prestigious in the world after the Nobel award, acknowledges the important contributions which Giuseppe Occhialini has made to the advancement of knowledge of the fundamental structure of matter.

A number of distinguished British-based theoreticians, including Roy Chisholm, Richard Dalitz, Herbert Fröhlich, John C. Gunn, Peter Higgs, Abdus Salam and Euan Squires, attended a ceremony at the University of Edinburgh in October to mark the retirement of Nicholas Kemmer as Tait Professor of Mathematical Physics.

Following Yukawa's first ideas on nuclear exchange forces, Kemmer's work in the 1930s substantially developed our ideas of the pion. He predicted that the pion would be a pseudoscalar (spin zero, negative parity) particle, and that it would exist in electrically neutral, as well as charged, forms. While it was Heisenberg who first proposed the idea of isotopic spin, Kemmer had the idea of using invariance principles in an abstract isotopic space and so paved the way for later developments of internal symmetries for particle interactions. In 1975 he received the Oppenheimer Memorial Prize.

In addition to his research, he is a distinguished teacher who has been highly influential in shaping the present generation of theoreticians working in British universities.

Peter Carruthers, head of the Theoretical Division at Los Alamos, has been elected chairman of the board of trustees of the Aspen Center for Physics, Colorado, USA, succeeding Murray Gell-Mann.

HEPAP subpanel

The USA Department of Energy has appointed a subpanel of HEPAP to review the overall quality and scope of the high energy accelerator research and development effort in the U.S. High Energy Physics Program. The review is to include:

Celebrating completion of the last bending magnet for the PEP electron-positron ring at Stanford. Flanking members of the design and fabrication team are Gerry Fischer on the left and Bob Bell on the right. Al Mixon (with the cast on his hand) reported for work to complete the magnets, despite his injury.

(Photo SLAC)



1. The examination of the existing accelerator R. and D. effort

2. A comparison of U.S. efforts with those in other countries

3. Specific recommendations with particular emphasis on

a) Breadth and depth of the R. and D. effort

b) Balance among short-term, mid-term and long-term R. and D.

c) Priorities

d) Appropriate funding levels.

The subpanel hopes to complete its work by June 1980. Its members are R. Diebold (Argonne), K. Johnsen (CERN/BNL), D. Keefe (LBL), A. McInturff (BNL), F. Mills (Fermilab), W.K.H. Panofsky (SLAC), C. Pellegrini (BNL), J. Sandweiss (Yale), R. Schwitters (Harvard), L. Teng (Fermilab), M. Tigner, Chairman (Cornell), A. Tollestrup (Fermilab), W. Willis (BNL/CERN).

Those with opinions on the subject matter of the review are invited

to write to the Secretary of the subpanel, D. Sutter, Division of High Energy Physics, Office of Energy Research, U.S. Department of Energy, Washington, DC 20545.

New life for old computers

After many years of sterling service at CERN, two venerable Control Data Corp. (CDC) 3100 and 3200 computers are being shipped to Yugoslavia where they will be used at the Novi Sad Institute of Physics.

These computers were the heart of the FOCUS (Facility for On-line Computing and Updating System), developed at CERN during the years 1967 to 1971, and eventually phased out in 1978 with the commissioning of the CERNET commu-

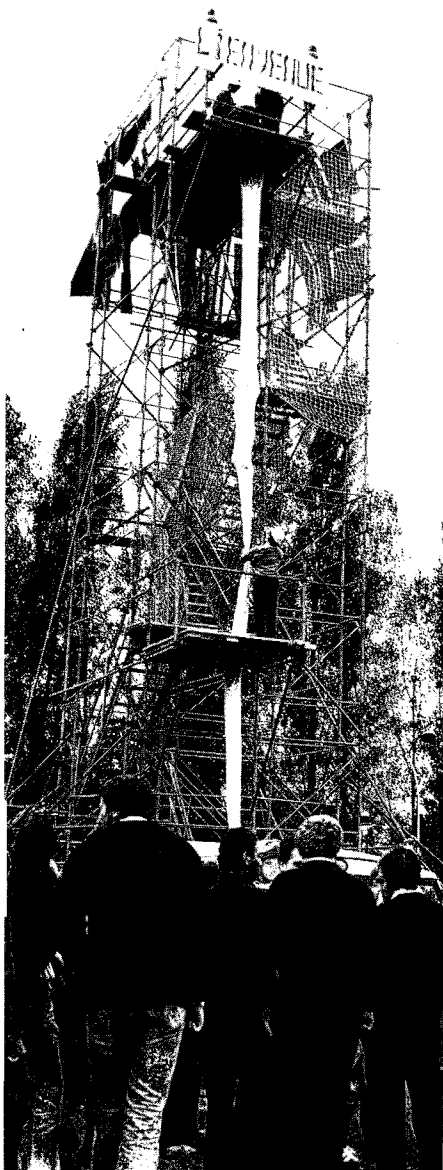
nications network (see May 1978 issue, page 162).

PEP progress

The PEP electron-positron storage ring, being built by a Berkeley/SLAC collaboration at Stanford, is now nearing completion. All bending magnets are assembled and were scheduled to be installed, together with all the quadrupoles and sextupoles, in the ring by mid-October. The restart of the linac in October after its summer shutdown would then enable electrons to be injected and steered through interaction region 8, r.f. cavities and part of magnet arc 7. Injection studies will then continue during week-ends in November, allowing construction to be completed in the ring during the remainder of the week. In this way it is hoped that colliding beams can be achieved before Christmas.

1. One of the star attractions at CERN's *Journée du Personnel* held on 29 September was the rescue chute built and manned by the CERN Fire Brigade. Over 1000 intrepid souls made the 20 metre descent.

(Photo CERN 271.9.79)



1.

2. An inside view of the CERN Fire Brigade's rescue chute.

(Photo CERN 359.9.79)



2.

3. Over 130 people entered for the various races which had been organized. Everybody got a medal.

(Photo CERN 338.9.79)



3.

Journée du Personnel

On 29 September, the actual 25th birthday of CERN, over 3000 CERN staff, friends and relatives turned up to enjoy the '*Journée du Personnel*' (Staff Day). Among the attractions were games, sports, sideshows, competitions, films, music and entertainment, and dancing that went on into the small

hours. One highlight was the playing of 'Happy Birthday, CERN — From Fermilab', recorded at Fermilab. The song was composed by Arthur Roberts, and directed by Janice Roberts, with R. Lubway as soloist. Among those in the chorus were Leon Lederman, Dick Carrigan, John Peoples and Drasko Jovanovic:

1.

Near the lake of Geneva, near the

ski slopes Jurassic,
Lies a physics Yeshiva, in a home
neoclassic.

They've a budget elastic, their machines are the best —
Their ideas are fantastic, and
precisely expressed.

They're smart, they're rich,
they've heart — they've which?
They're the elite — who can com-
pete? Ah...

Some of the 52 staff with 25 years' service at CERN who took part in a special ceremony on 29 September.

(Photo CERN 425.9.79)



Refrain:

CERN is great!

Twenty-five and still expanding,

CERN's first-rate,

Sneers and envy notwithstanding,

CERN's well-run,

Trying to gain a lead commanding,

Everything a physicist desires is at CERN!

II.

The cafeteria's stupendous, serves ambrosia and nectar,

All the leaders tremendous, from concierge to director,

Electronics transcendent, wire chambers are tops,

Superstars most resplendent, also excellent shops.

They've guile, they're sleek, they've style, they've chic!

Their pace is fleet and hard to beat! — Ah...

CERN is great!

Physics there's a thing of wonder!

CERN's first-rate!

Selection panels never blunder.

CERN's well run!

Just a little blood and thunder.

Everything a physicist desires is at CERN!

III.

Here's the toast we're proposing: may your future be greater,

And the budget imposing for your next accelerator;

May your staff be effective and your beams full of pep,

May you gain your objective of constructing the LEP!

They're tough — that's true.

They're rough — That too.

They're kind — they're not!

They're sweet — they're WHAT?

Ah...

CERN is great! All good men find recognition,

CERN's first-rate! Bright ideas all reach fruition,

CERN's well run! Decisions all

above suspicion,

Everything a physicist desires is at CERN.

CERN is great! Everybody loves each other!

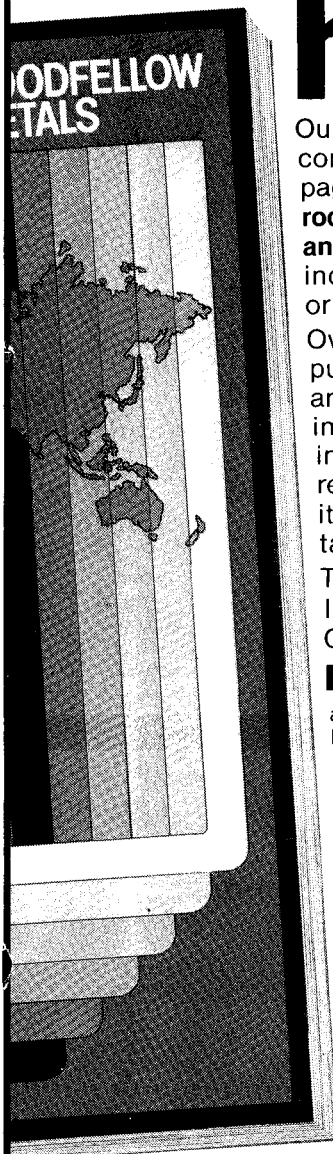
CERN's first-rate! Trust each other like a brother!

CERN's well run! Except one guy I'd like to smother!

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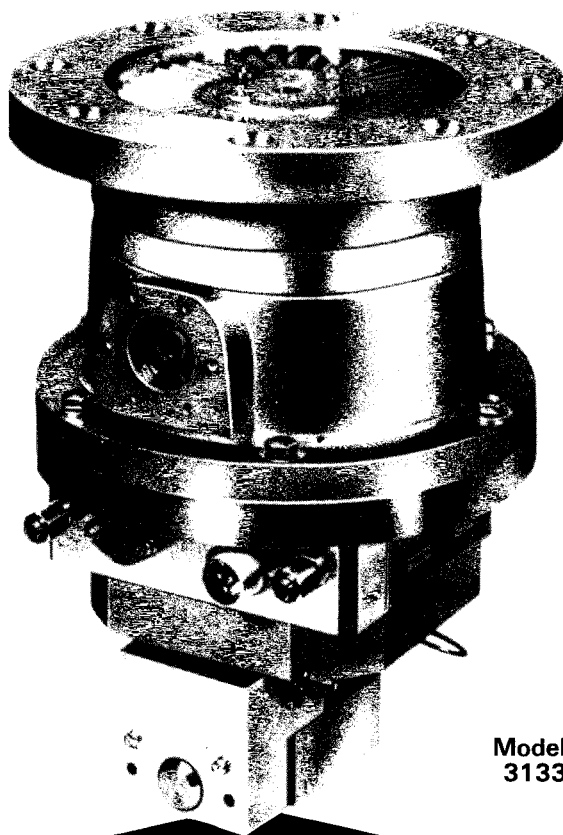
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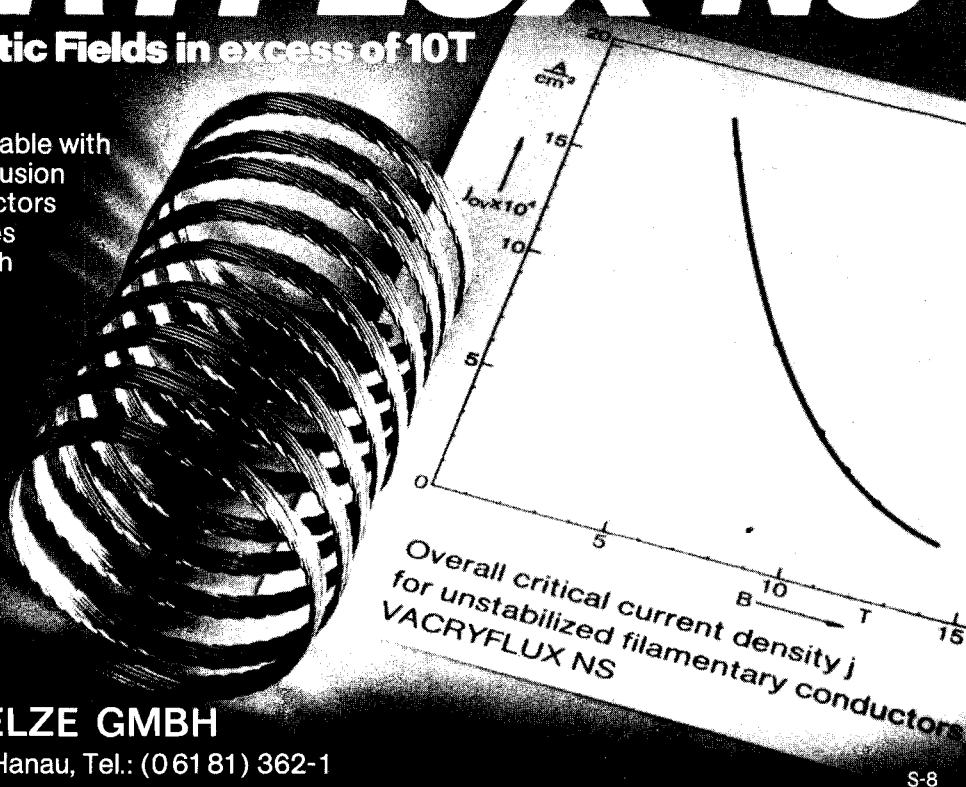
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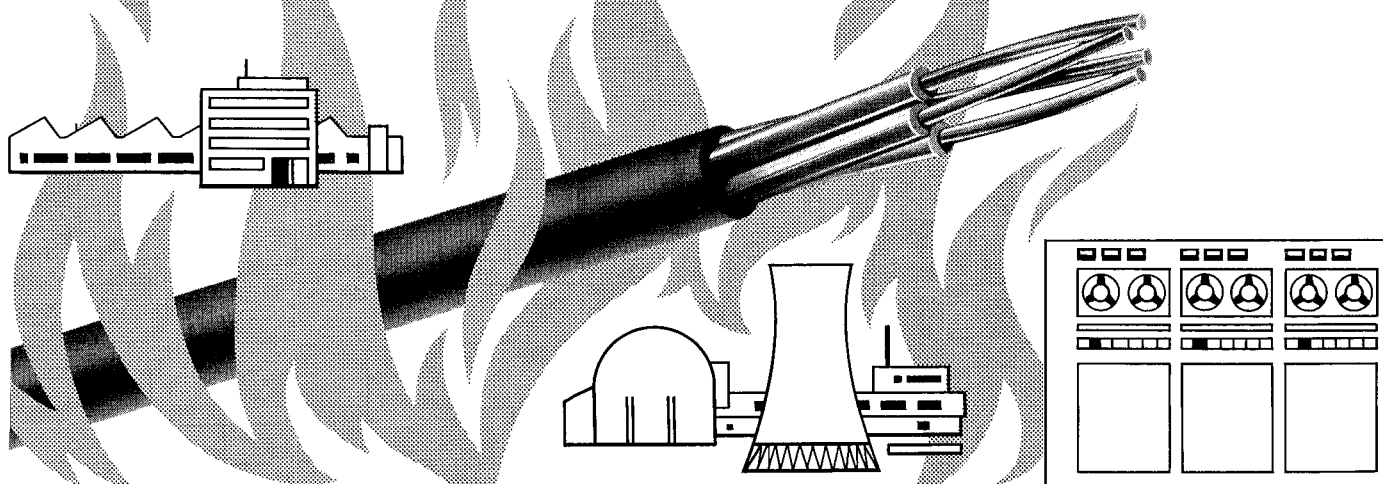
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- LAM on overflow
- many input options

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3620

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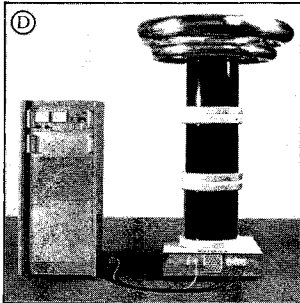
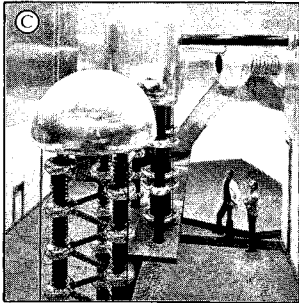
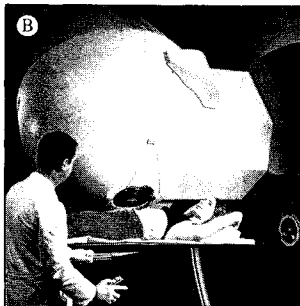
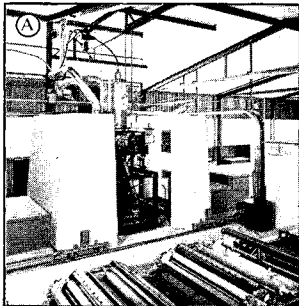


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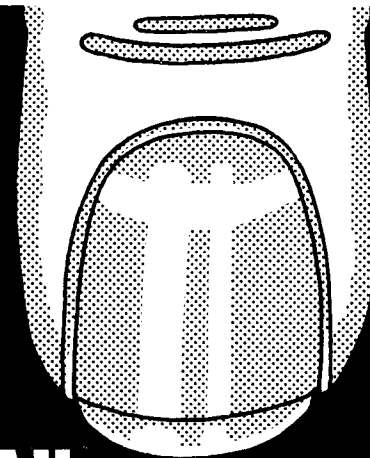
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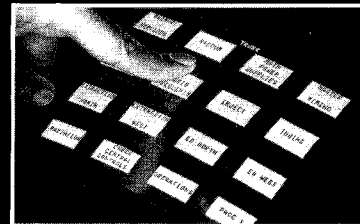
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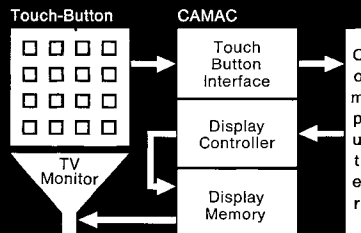
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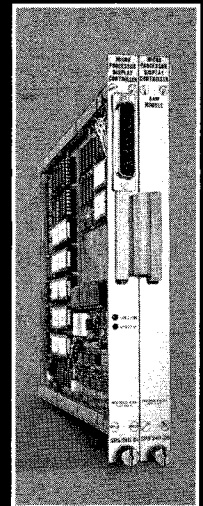
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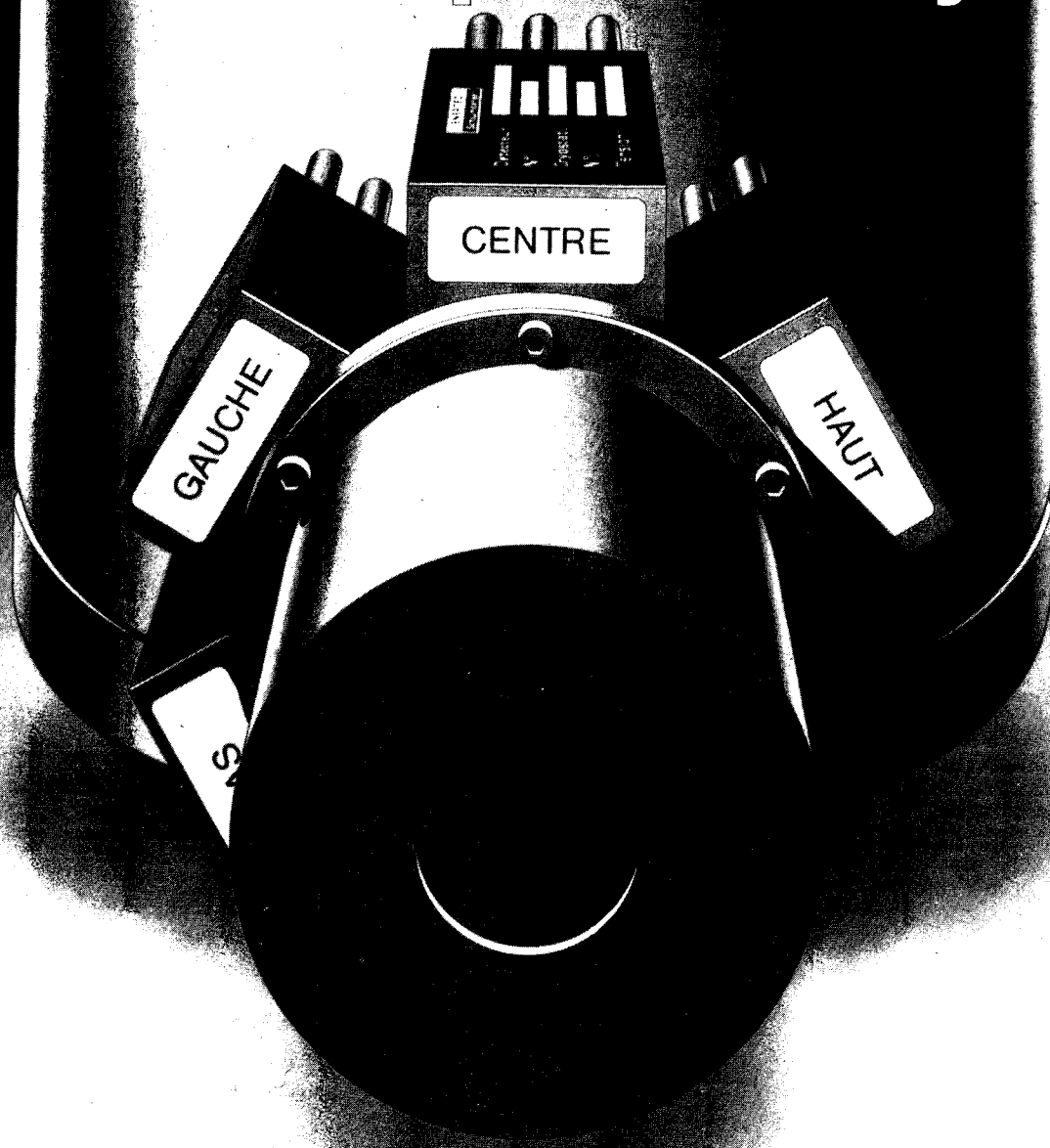
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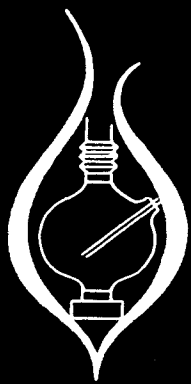
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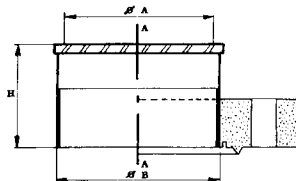
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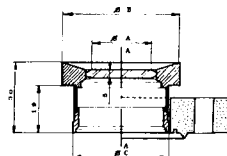
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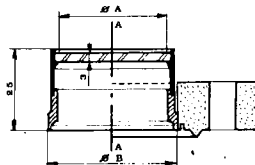


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HCA 01	20	25	30
HCA 02	25	31,8	35
HCA 03	30	38	36
HCA 04	45	51	40
HCA 05	55	63	42
HCA 06	66	76	48

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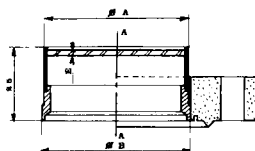


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HAQ 1.01	22	45	40
HAQ 1.02	32	60	50
HAQ 1.03	42	75	70
HAQ 1.04	52	90	80



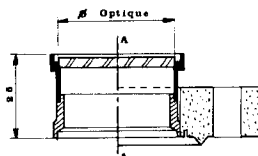
REF.	∅ A optique	∅ B	∅ C
HAQ 2.01	0,60	0,75	0,08
HAQ 2.02	0,84	1	0,08
HAQ 2.03	1,34	1,5	0,10

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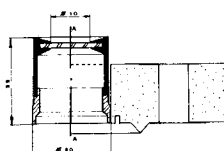


REF.	∅ A optique	∅ B	∅ E
HAS 01	16	20	2
HAS 02	26	30	2
HAS 03	36	40	2
HAS 04	46	50	2,5
HAS 05	56	60	3
HAS 06	0,84	1	0,08
HAS 07	1,34	1,5	0,08
HAS 08	1,84	2	0,10
HAS 09	2,34	2,5	0,12

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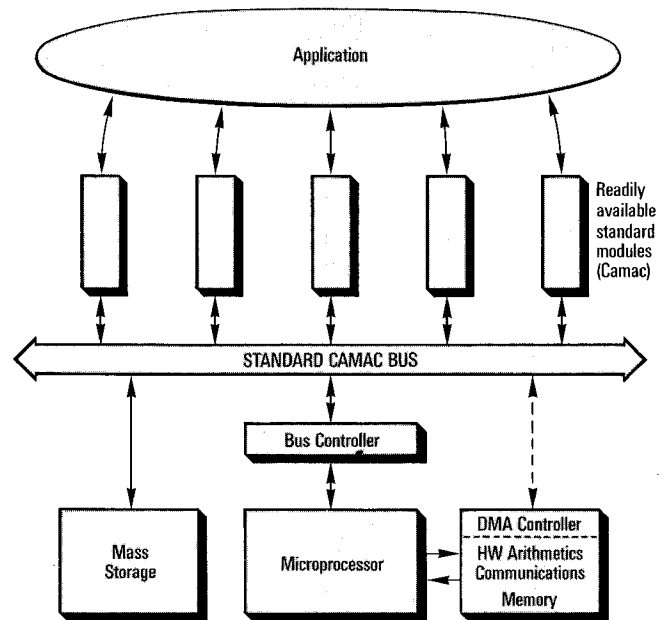
- hardware options e.g. DMA
- assembler modules

Resident:

- development and library

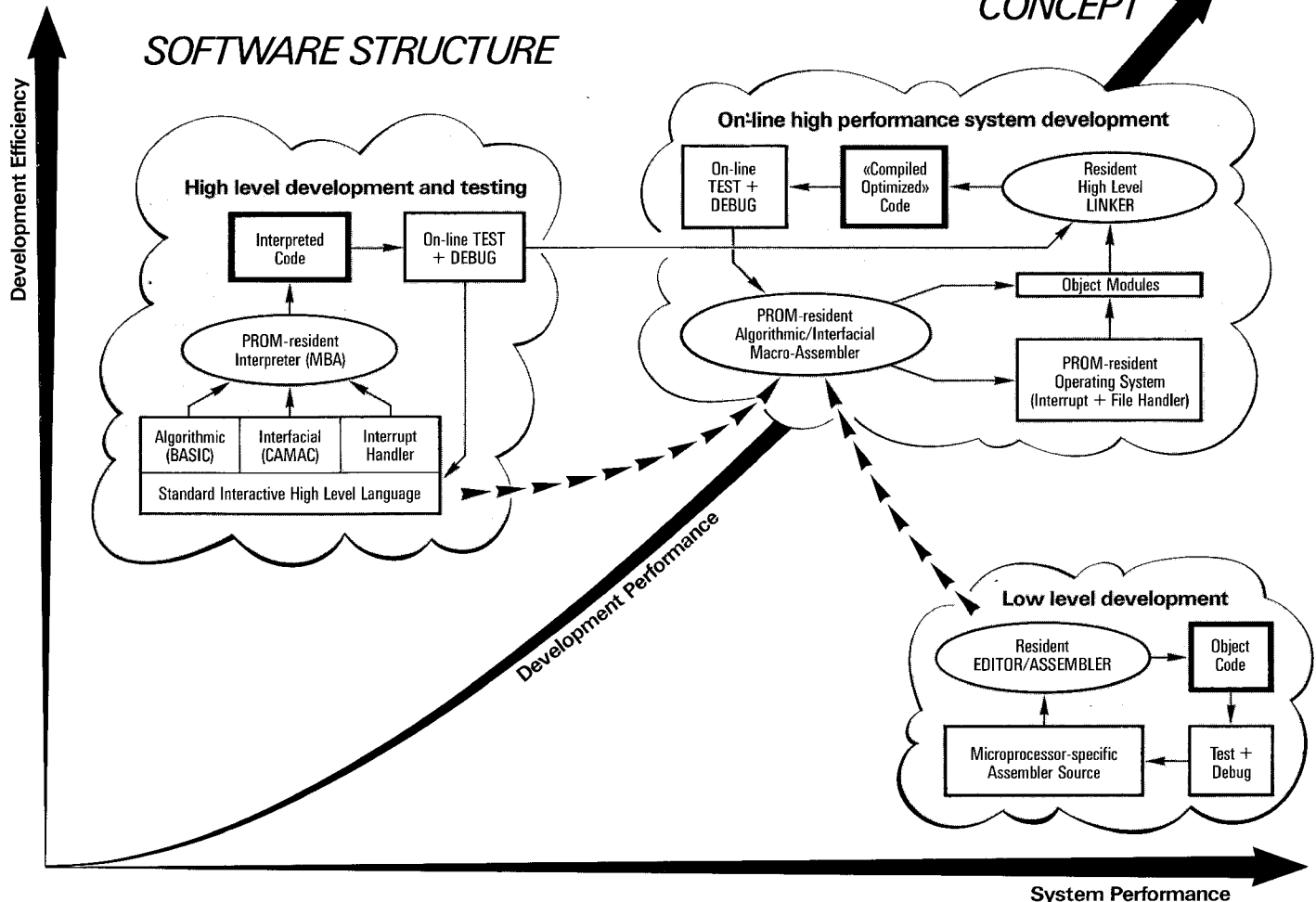
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edited by **B. Castel**, Queen's University, Canada
B. Goulard, University of Montreal, Canada
and **F. C. Khanna**, Chalk River Nuclear Laboratories, Canada

In recent years, rapid advances have been made in our exploration of the nuclear system at the fundamental level of the quark model, at intermediate energy from recent meson factories data, and at the more classical nuclear spectroscopy level. Offering contributions by outstanding physicists in the field, this book illustrates the directions that nuclear physicists are taking in shaping a unified picture of low, medium, and high energy nuclear phenomena. *NATO Advanced Study Institutes Series, Series B: Physics, Volume 45*. approx. 680 pp., 1979, \$69.50 (\$83.40/£43.79 outside US)

Pulsed Neutron Research

edited by **N. G. Basov**, Academy of Sciences of the USSR, Moscow

Pulsed Neutron Research presents up-to-date reports by Soviet researchers involved in laser driven thermonuclear fusion. The experimental and theoretical data introduced here consider the processes in which "neutron gas" exhibits the collective properties of a statistical ensemble of Fermi particles. Investigators discuss the alterations of neutron-physical constants at first-order phase transitions for several materials. *P. N. Lebedev Physics Institute Series, Volume 94*. approx. 110 pp., illus., 1979, \$35.00 (\$42.00/£22.05 outside US)

Photopion Nuclear Physics

edited by **Paul Stoler**, Rensselaer Polytechnic Institute

This book offers a comprehensive survey of the status of the theoretical ideas and experimental programs which are being developed worldwide in photopion physics research. Topics reviewed include radiative pion capture, neutral and charged pion production near threshold and in the resonance region, pion-nucleus interactions, deviations from quasi-free production, and the isobar doorway model. 448 pp., 1979, \$42.50 (\$51.00/£26.78 outside US)

The Whys of Subnuclear Physics

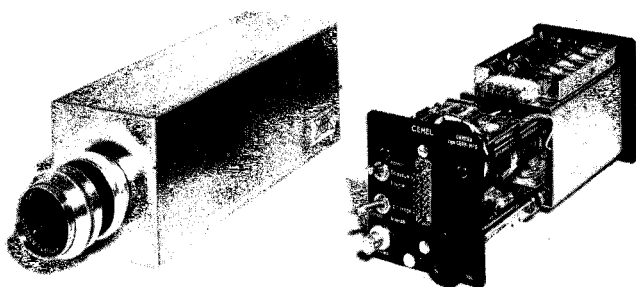
edited by **Antonino Zichichi**, International School of Subnuclear Physics, Switzerland

In this volume, international experts from nineteen countries address themselves to the most provocative problems in subnuclear physics today. New as well as "forgotten" issues are focused upon, with many topics receiving their first consideration outside of highly specialized journals. Topics covered include the production of new particles, the use of instantons, parton distributions and Q^2 dependence, quark-geometrodynamics, and charm particles. A volume in the *Subnuclear Series*. approx. 1,220 pp., 1979, \$85.00 (\$102.00/£53.55 outside US)

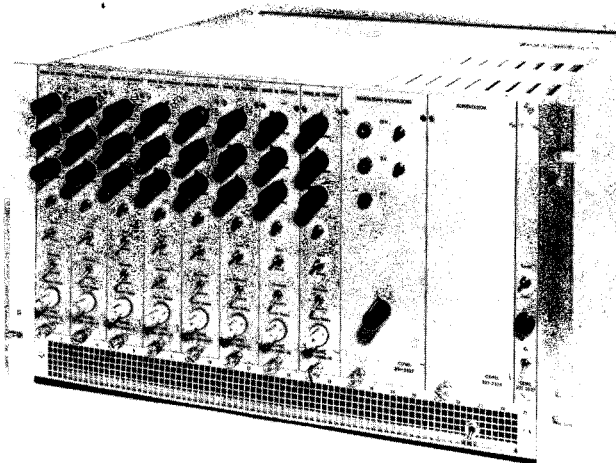


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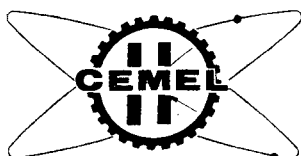
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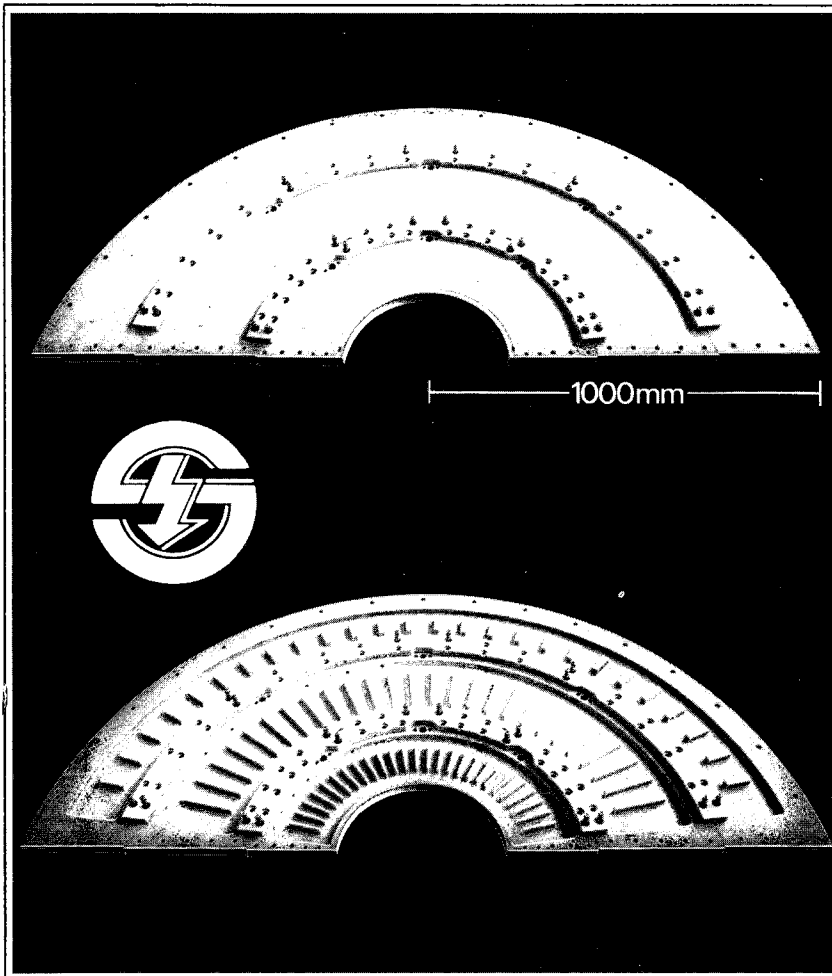
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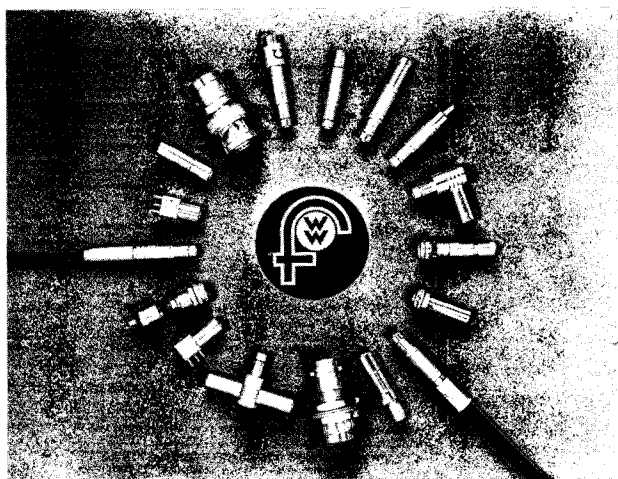
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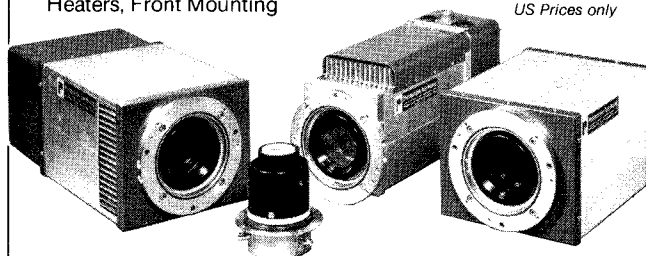
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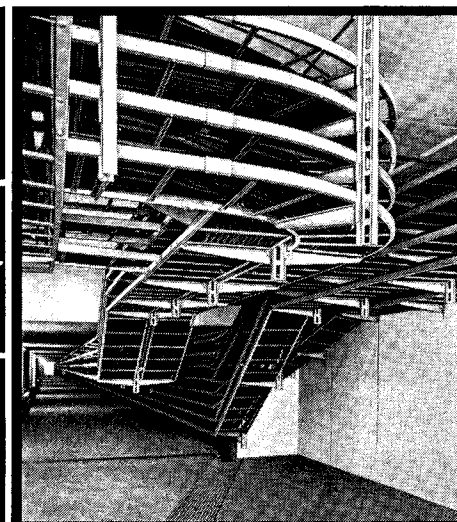
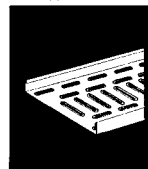
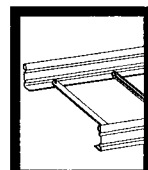
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description

During the past few months we have introduced the various elements of the new SEN Controller system: in this issue we wish to describe the software and typical applications.

The heart of the system is a powerful **16-bit microprocessor** (TMS 9900) associated with 16K-RAM, 2K-EPROM and TTY interface, located on a single CAMAC PC-board which is found in each of the intelligent units of the system (ACC 2099, ACC 2103 and STACC 2107).

Front-end processing in a typical problem of large CAMAC process – control and data collection systems. The ACC provides the best solution to this problem due to its processing power and easy implementation in the system – **both hardware and software.**

On the hardware level, the ACC 2099 or ACC 2103 is compatible with all commonly used controllers – the A2 parallel controller, the L2 serial controller and the NORD 10 dedicated controller. Due to its very high density, a minimum of CAMAC space is lost to achieve front-end processing as fast as the main computer.

Software implementation is achieved by simply adding-on the front-end programs to your existing software. The front-end programs can be either assembly programs or high level programs loaded down-line through the crate controller into the ACC RAM memory, or resident in the ACC EPROM memory. Assembly programs are normally written on the host computer using cross assemblers: high-level programs in NODAL – a BASIC with floating point arithmetics – are written, either on the NORD 10 main computer using a cross-compiler*, or locally at the ACC level using an EPROM resident NODAL interpreter. Debugging facilities are available at the ACC level.

Test and stand-alone systems have the common problem of simulating the exact environment of the under-test device. Our new CAMAC controller system is able to test the device through the same controller used in the experiment and under the same software. The front-end system can be converted into a stand alone system simply by placing the CAMAC branch off-line. Test programs are loaded from a floppy disc connected directly to the ACC (ACC 2103 only). For permanent stand-alone systems, the STACC 2107 (Stand-Alone CAMAC Computer) combines the functions of a microprocessor and a controller. A floppy disc resident software is also available.

* available from CERN, div. SPS

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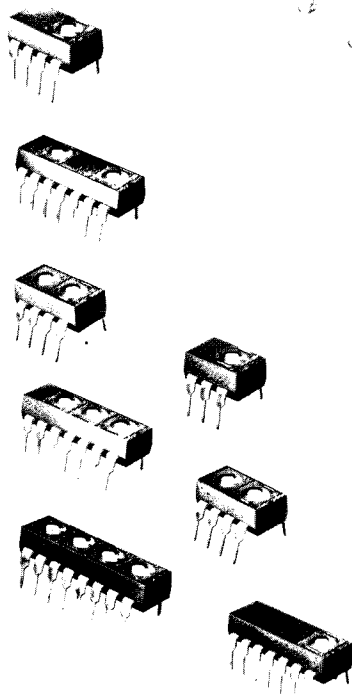
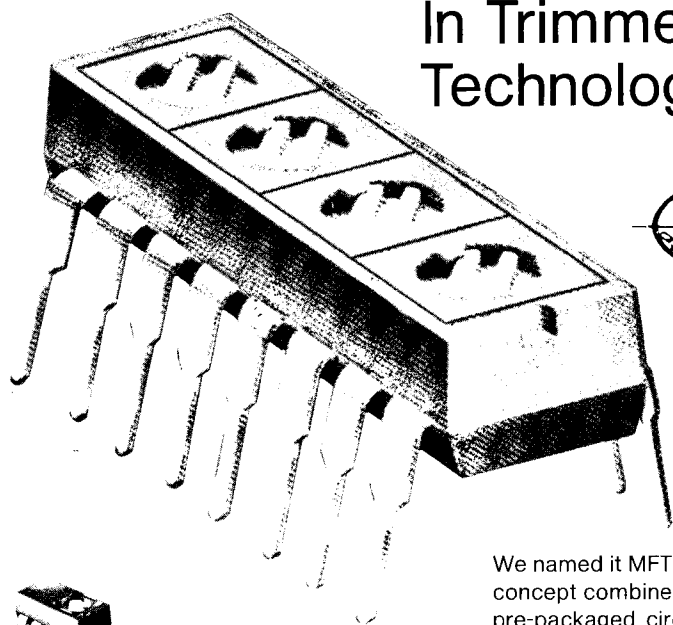
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SAVES TIME – MFT trimmers reduce the time and cost of designing circuits. It also saves production time as MFT trimmers are compatible with DIP automatic insertion equipment. And, there are less components to purchase and handle.

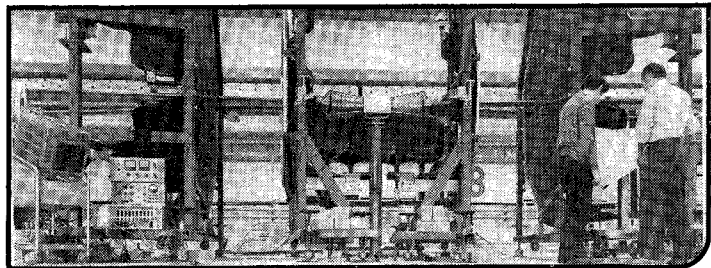
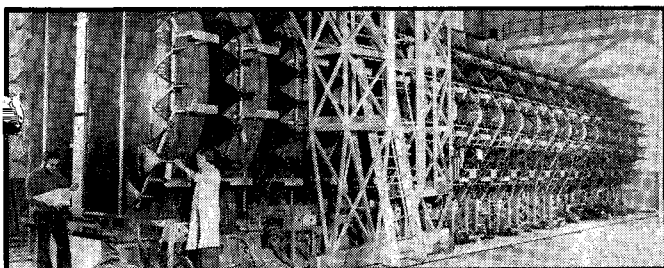
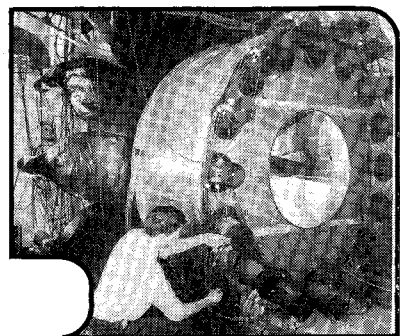
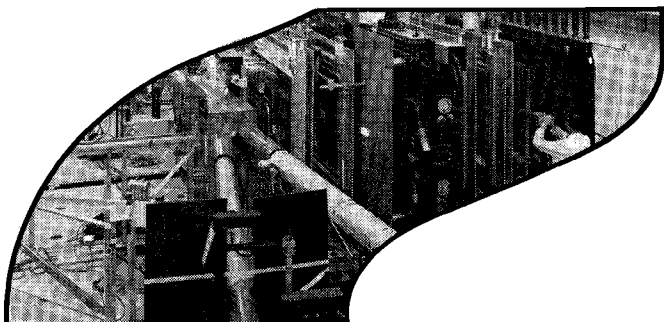
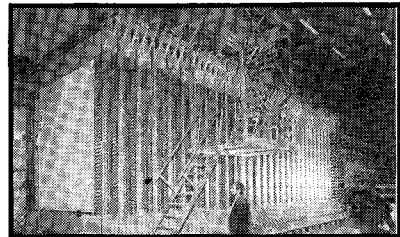
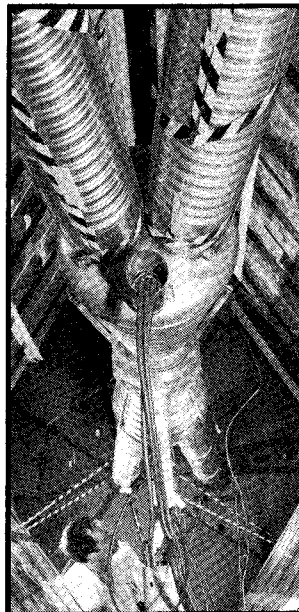
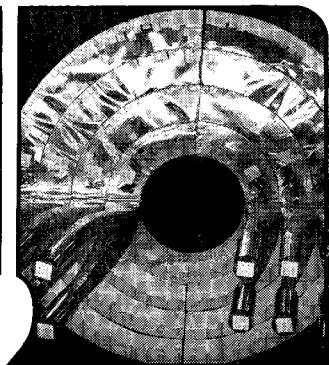
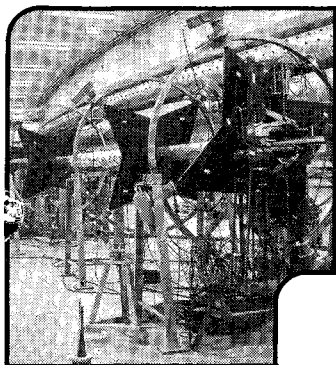
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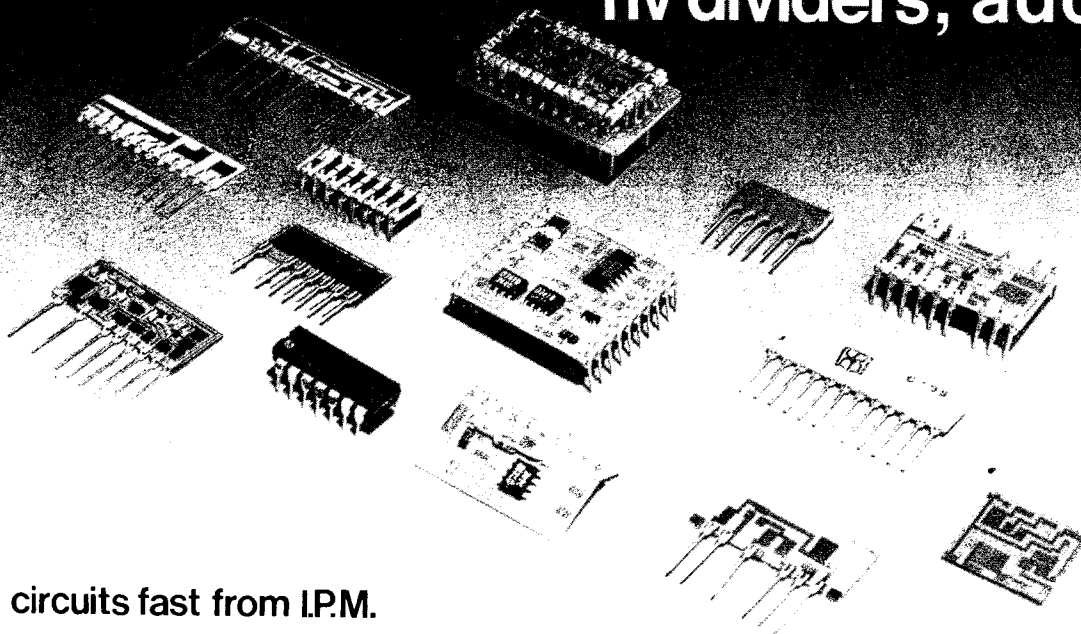
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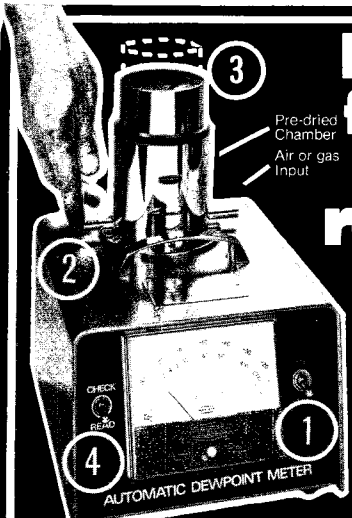


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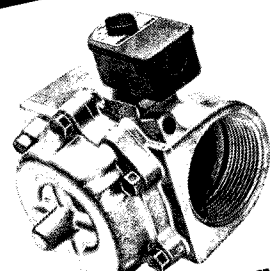
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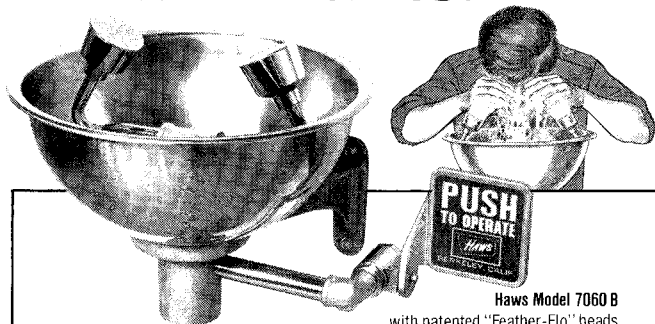
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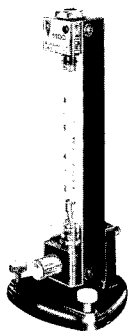


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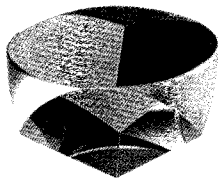
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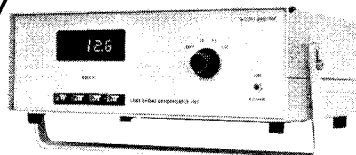
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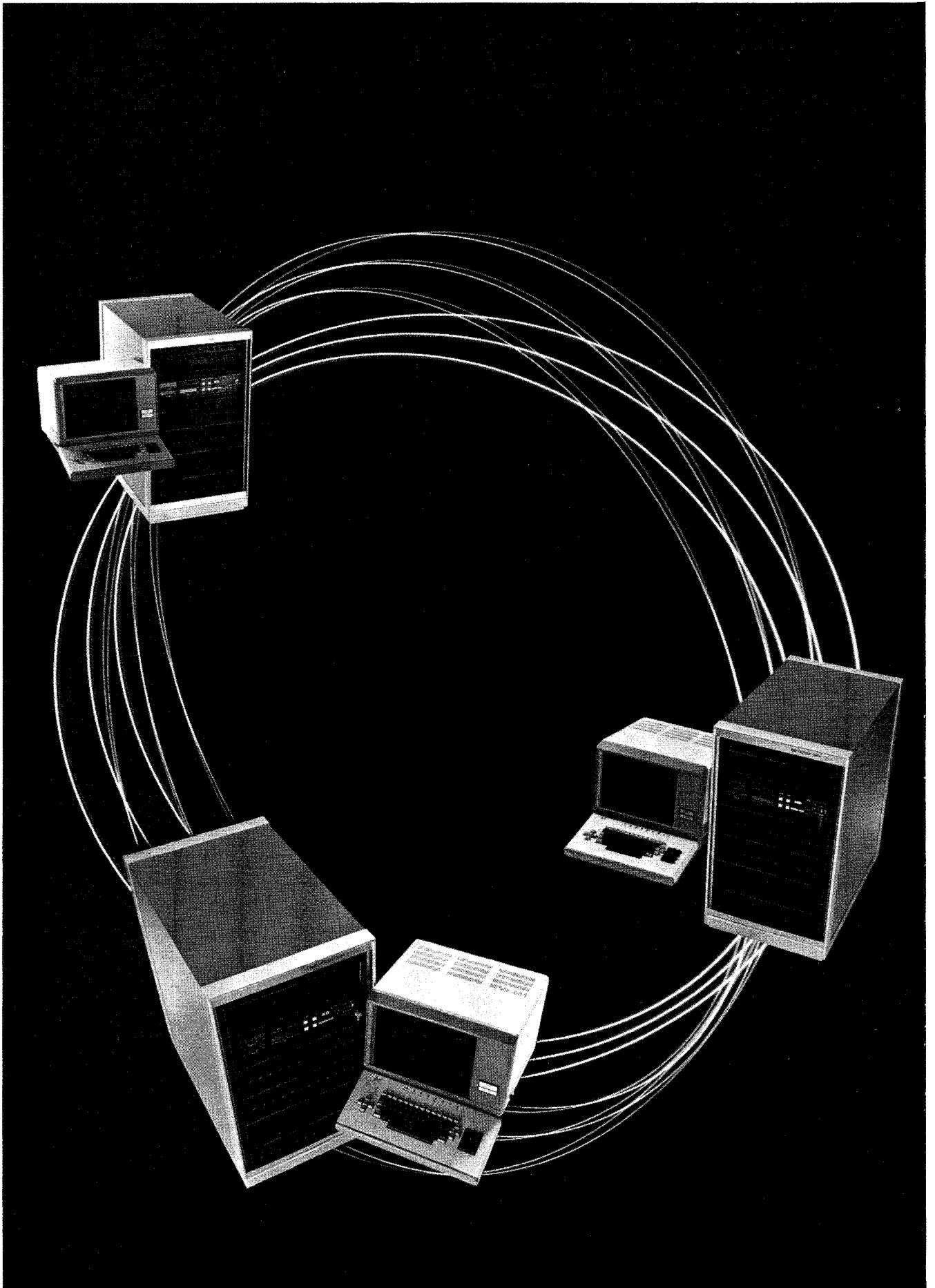
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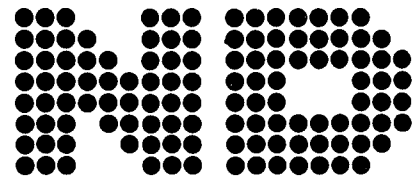


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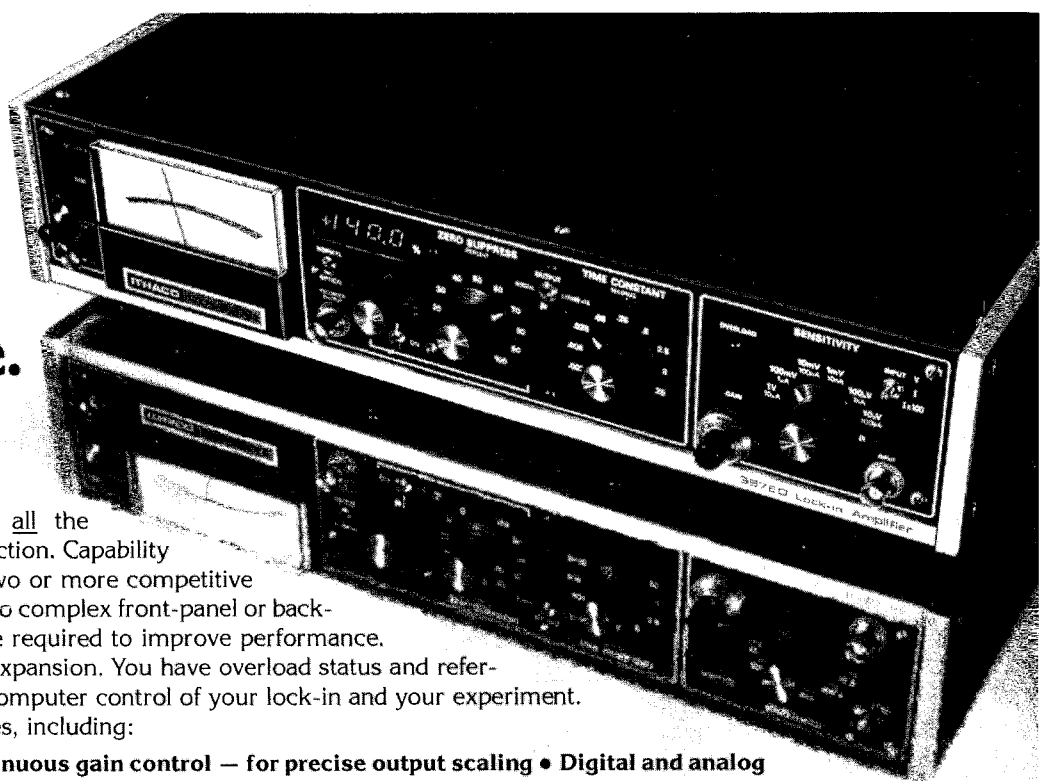
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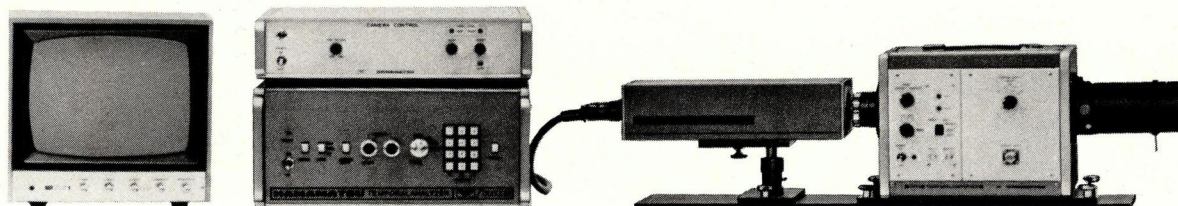
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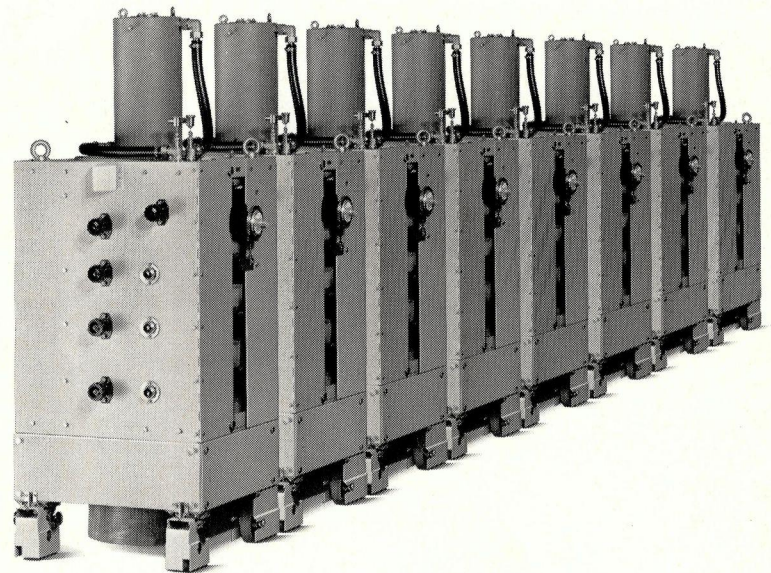
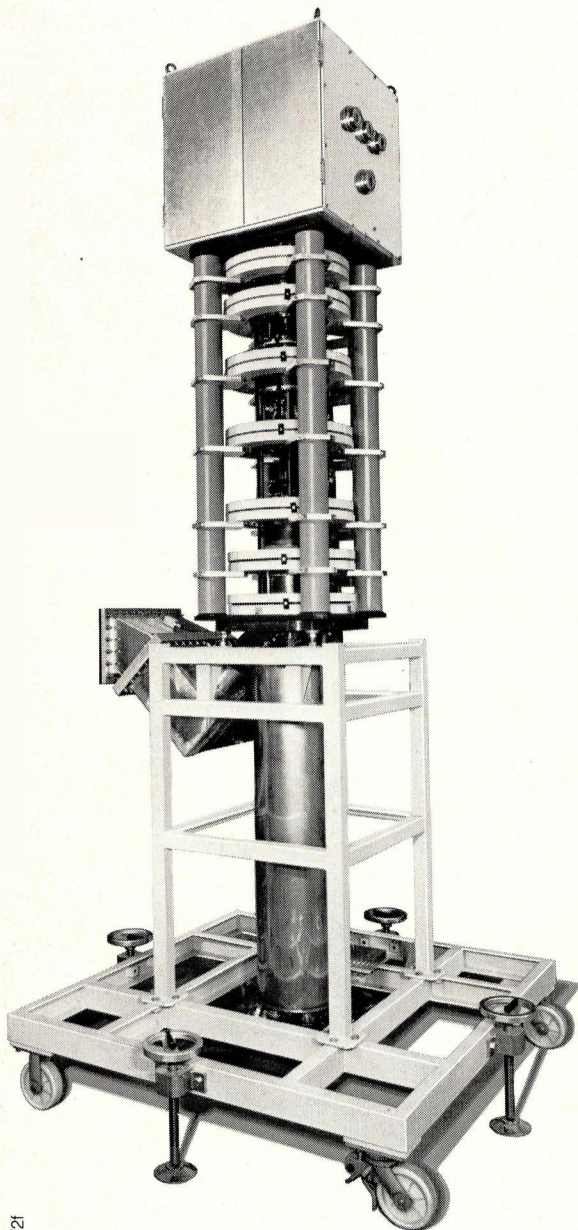
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800 MHz / 450 kW cw

8 klystrons YK 1198
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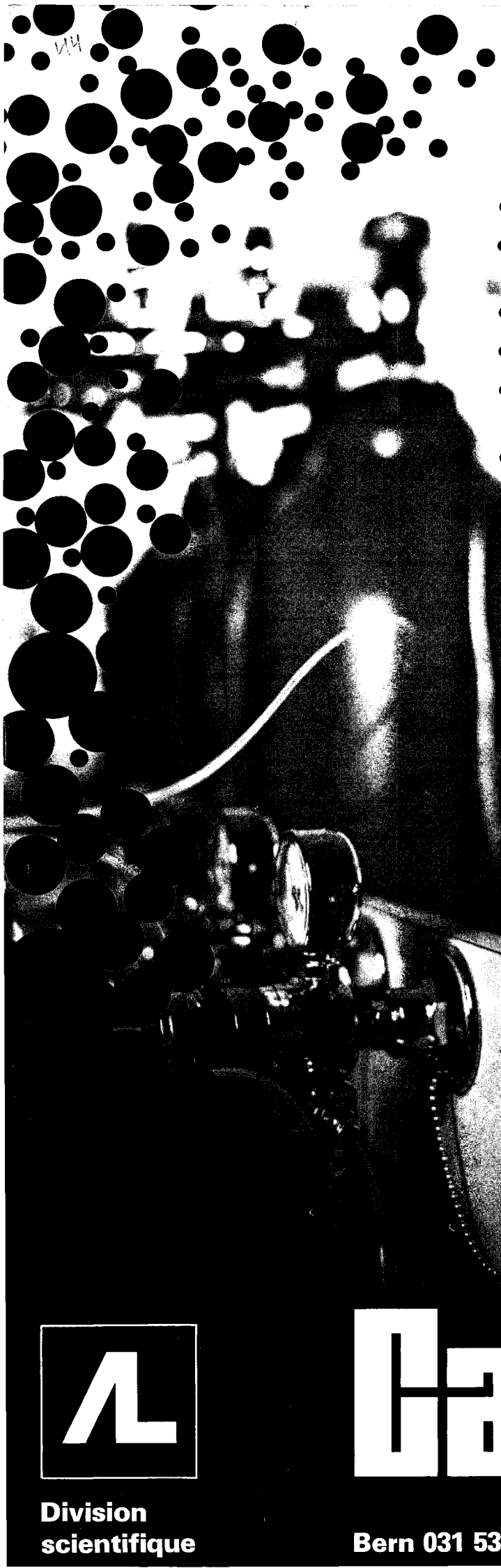
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