

The diagram shows the results from the section of the questionnaire concerned with factors influencing the choice of a school. It assembles the replies of all the staff who filled in the questionnaire.

Different degrees of importance (predominant; important; desirable; of no importance) were assigned to the series of factors listed on the left and a statistical analysis of the replies led to the results presented. (The points give the average value and the bars set the 95% confidence limits. The statistical techniques used in dividing the replies into the categories as shown and in assigning the confidence limits are described in an appendix to the report.)

The replies were broken down and separately analysed by nationality, and the stars (*) indicate the factors which were given different emphasis by different nationalities.

It is mainly from these results that the conclusions of the report were drawn as to the objectives to aim for in the education of children of 'mobile' parents.

It should be noted that the surprisingly high ranking accorded to the factor concerning distance and transport, is due to local conditions in the neighbourhood of the Laboratory which require a local solution. It is not therefore incorporated in the main conclusions.

Thanks to the initiatives mentioned above, the search for an adequate solution does not start from scratch but with the experience of several fruitful efforts in this direction already behind it.

The moment is ripe for a new step forward. At a meeting called by UNESCO in November 1967, the European Ministers for Education unanimously affirmed the willingness of their governments to continue with the exchange of experiments and of information with a view to bringing the different educational systems sufficiently into line to make the transfer of students from one system to another an easy matter. The situation at CERN provides an opportunity for converting this willingness into a practical application. It is of a scale sufficiently small to make the demands on resources quite modest, yet sufficiently broad in its implications to constitute a new step forward in the field of education in Europe.

News from abroad

Construction go-ahead for Weston

After serious fears that the budget for the American 200 GeV project at Weston would be limited to 'design money only' for the fiscal year which has just started, there is great relief that a sufficiently large sum has been granted to enable construction to begin. The danger of a year's stagnation for the project has been avoided.

In the context of the present severe restraint on public spending in the USA, the House Appropriations Committee had cut the budget to \$7.1 million to be used for further design studies only. Since the project is now at a stage where construction is the natural next step, it seemed likely that this would lead to the break-up of the strong team which has come together at the National Accelerator Laboratory under Professor R.R. Wilson to build the machine.

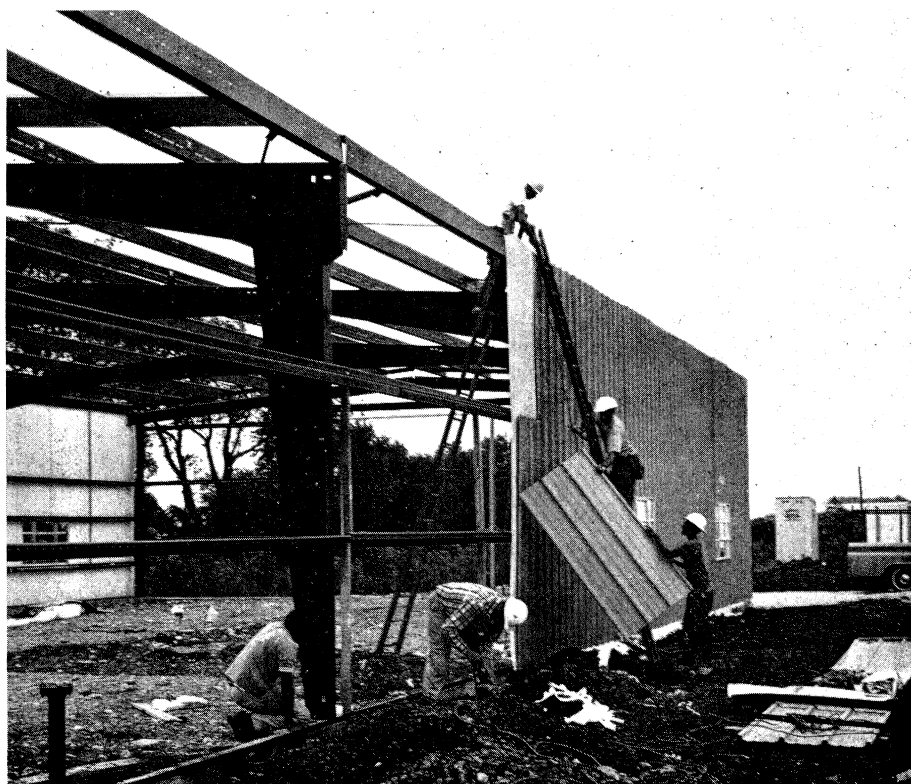
The budget has now been increased to \$12.074 million plus \$2.5 million carried over from the previous year and approval

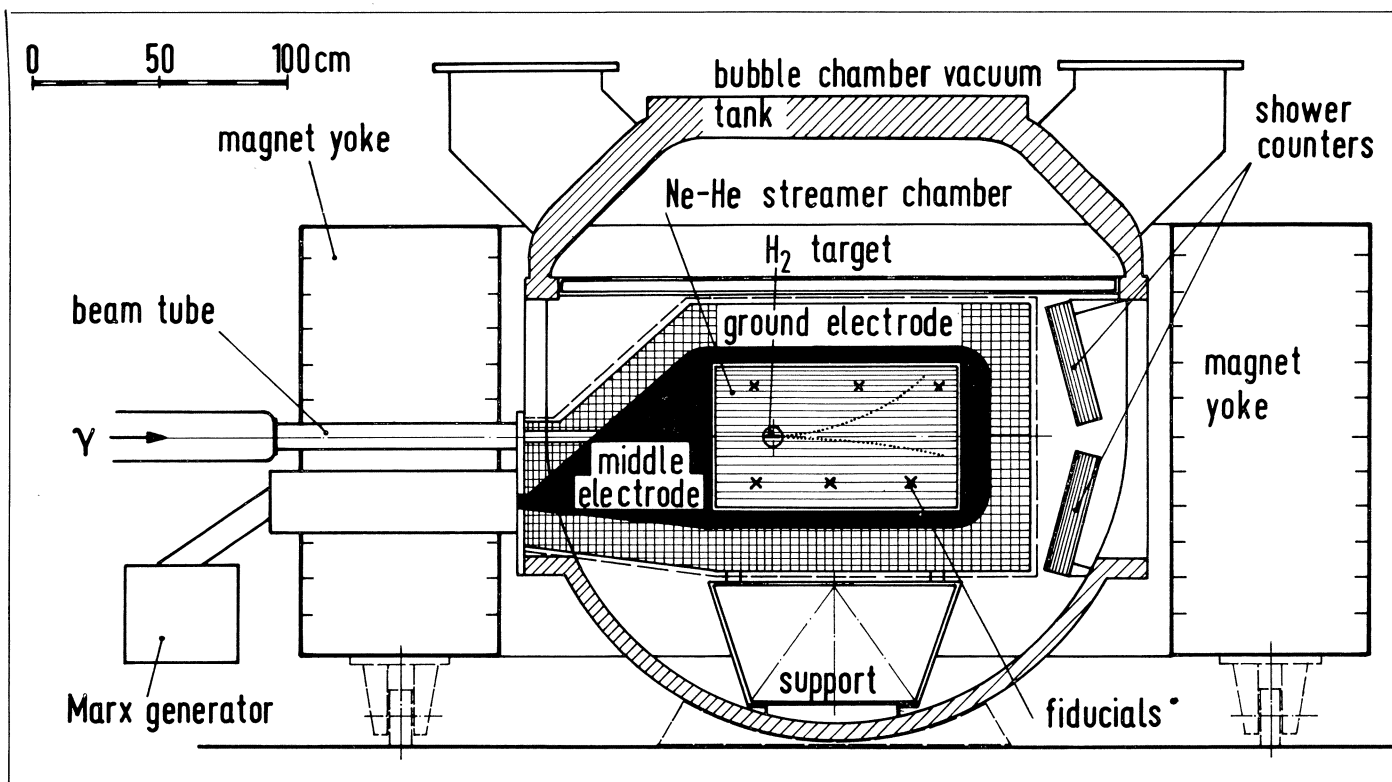
has been granted for construction. It is one of the very few 'go-aheads' to be given to new projects in America for the coming year. Work will start on such things as the linac and the booster buildings.

Tests are under way on a main-ring magnet model and the results are as expected, showing 3 - 4% saturation at 18 kG and 15% saturation at 22 kG. 'Good field' is retained up to 18 kG. A booster magnet model will be tested in September. Work on the injector components is well advanced.

The Laboratory hopes to have moved from its temporary premises at Oak Brook to 'the campus' at Weston by 1 September, and, despite the restrictions imposed by the reduced budget for the present fiscal year, Professor Wilson continues to hold to the scheduled beam date of 30 June 1972.

A photograph taken at Weston on 31 July showing construction of the third Laboratory building — the r.f. building. The Laboratory hopes to have moved from Oak Brook to the 'campus' at Weston by 1 September.





DESY streamer chamber

The report on the work at Daresbury, in the May issue, described (page 104) the streamer chamber detector to be constructed at the Laboratory. The collaboration between Daresbury, Glasgow, Manchester and Sheffield was referred to as 'the first European group' to construct such a large universal detector using streamer chambers. (See CERN COURIER vol. 7, page 219 for a description of this new technique).

At that time we were unaware of the work of a group at DESY led by Dr. A. Ladage which has advanced much further. They have brought a streamer chamber into operation this month.

As in the Stanford and Daresbury designs the assembly has two streamer chamber compartments separated by a central electrode to which short, very high voltage pulses are applied. Earthed electrodes are then on each side of the high voltage electrode (this is a little difficult to visualize from the diagram which views the chamber perpendicular to the electrode planes). The electrodes are planes of wires so that it is possible to photograph particle events in the chamber through the wires.

Each compartment is filled with a helium-neon gas mixture and has a volume of $16 \times 60 \times 100 \text{ cm}^3$. This size has been dictated by the decision to use the magnet of the 84 cm bubble chamber, previously in use at the Laboratory, to provide the field for the streamer chamber. The bubble chamber had completed some very successful runs. Photon-proton inter-

actions had been investigated up to 5.8 GeV with hydrogen in the chamber. The chamber was then filled with deuterium and the latest run gathered about $2\frac{1}{2}$ million photographs to investigate photon-neutron interactions. The bubble chamber has now been dismantled to make the magnet, and the optics (which needed only slight modification), available for the streamer chamber assembly.

A tagged photon beam (coming in from the left in the diagram) will be used in the streamer chamber experiments onto a small liquid hydrogen target (4 cm long, 2.5 cm diameter) surrounded by a scintillation counter. The use of liquid hydrogen is an advance over the gaseous hydrogen used in the Stanford chamber, since it presents a more dense target which will increase the interaction rate, but it brings with it tricky problems of refrigeration.

The physics programme for the chamber is under discussion and will take shape when the tests which began this month are completed.

LAMPF Users Meeting

On 20 June, the first Users Meeting for the Los Alamos Meson Physics Facility was held at the Los Alamos Scientific Laboratory. LAMPF will be operated as a national facility with experimental time being shared probably about equally between teams based at Los Alamos itself and teams from Universities and research centres throughout the USA. More than a hundred scientists from outside the Laboratory attended the meeting.

LAMPF will produce meson beams about ten thousand times more intense than those at present available at comparable energies. The machine is a 800 MeV proton linear accelerator to provide 1 mA average beam current with a 6 to 12 % duty-factor. It involves some new design concepts which were described in the June issue of CERN COURIER, page 132.

Dr. L. Rosen, leader of the project, reviewed the progress in an introductory talk. The construction schedule aims for a beam by July 1972. However, the LAMPF budget was cut by \$7.5 million this fiscal year 1969 (\$26.4 million was requested) by the House Appropriations Committee and this could cause delays. It seems possible to hold the schedule using \$7 million held in reserve by the Bureau of the Budget.

The injector components are well advanced. An acceptable ion source has been built and a 750 kV power supply is on order. Work continues on a negative ion source and a polarized ion source. The linac section to take the beam to 100 MeV using a drift-tube structure is also well in hand. The copper-clad steel is ordered and prototypes of the drift-tubes, quadrupoles and r.f. power supplies are coming together. Ordering of the tanks and power supplies can go ahead as soon as money is available.

The linac section for energies above 100 MeV will use the new concept of side-coupled cavities. An electron model (24 MeV, 1 mA) is working very well and is being used to study beam-beam and beam-cavity interactions at high intensities, to identify any problems due to heavy beam-

A side view of the streamer chamber assembly built at DESY. The assembly uses the magnet, vacuum tank and optics of the 84 cm hydrogen bubble chamber which has been dismantled. The three electrode planes are parallel to the page. Photo DESY

loading and to develop a computer-based control system. Work on the experimental area lay-outs has not gone very far yet.

A Policy Advisory Committee for LAMPF has been set up consisting of R.R. Rau, V. Hughes, H. Feshbach, H.L. Anderson, G. Meier, C. Goodman, G. Cowan and R. Hofstadter.

After introducing some tentative ideas about how the experimental programme might be managed Dr. Rosen concluded with what he called an 'Orsen Welles type of remark':

'Within the next five years, changes in computer technology may bring new management problems. I refer to the possibility of remote data links between an on-line computer at the site of an experiment and an experimental group 2000 miles away. Such links would allow some degree of participation of a user in the running of an experiment, without actually being in close proximity to his equipment. I think this might offer some real advantages, especially if one can transmit visual displays as well as voice and printed messages. We may yet have to worry about how much importance one attaches to suggestions relating to the strategy for an experiment, which are made 2000 miles from the experimental site, while the experiment is in progress and perhaps while the strategist is sipping martinis'.

As is pointed out elsewhere in this issue, very few of the techniques now in use at CERN had been thought of when the Laboratory was conceived. Dr. Rosen's remark underlines that when thinking of experimental programmes far in the future we have to be prepared for some major changes... Physicists may grow to like martinis.

Excavation work for the Los Alamos Meson Physics Facility. The site is a finger-shaped mesa bordered by canyons to the north and south (canyons to the right of them, canyons to the left of them...). LAMPF will point 850 metres along the finger. To the east (just visible in the background of the photograph) is the Sangre de Cristo mountain range, and five kilometres to the west is the main technical area of the Los Alamos Scientific Laboratory. (Photo Los Alamos)

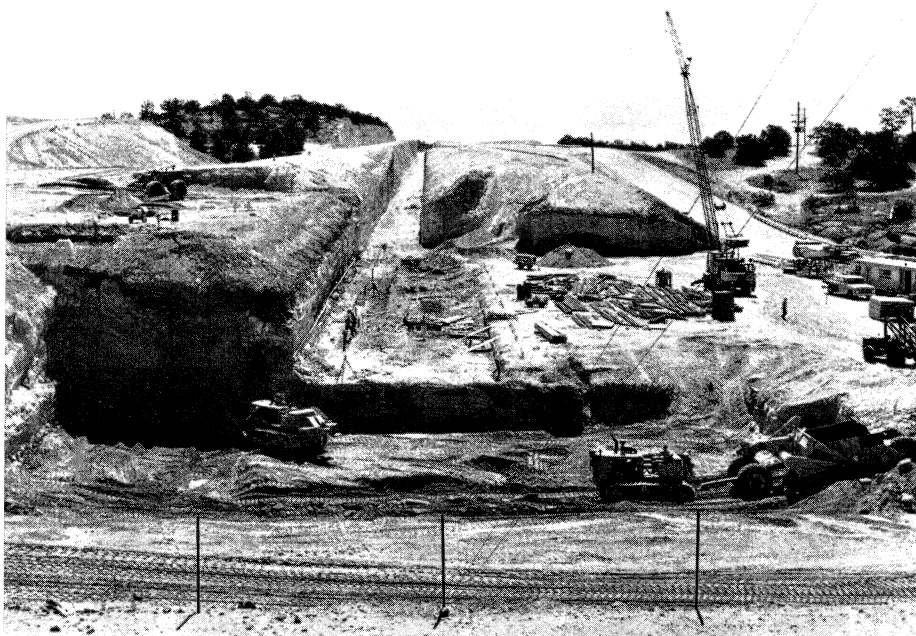
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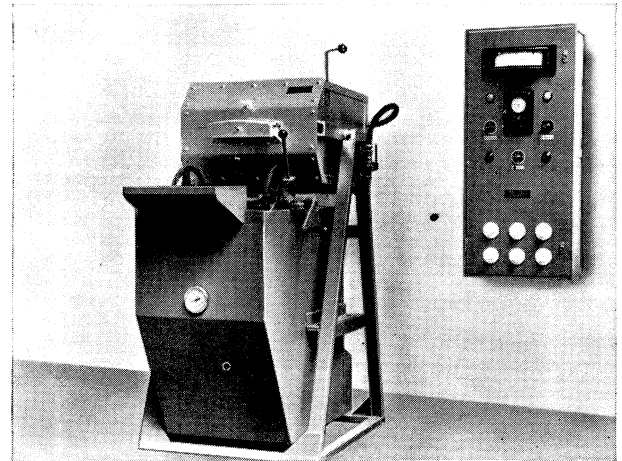
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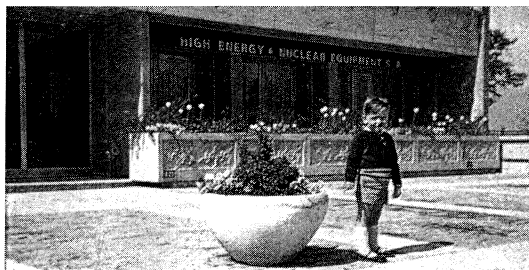
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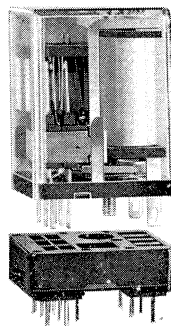
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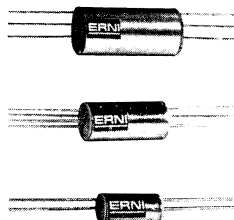
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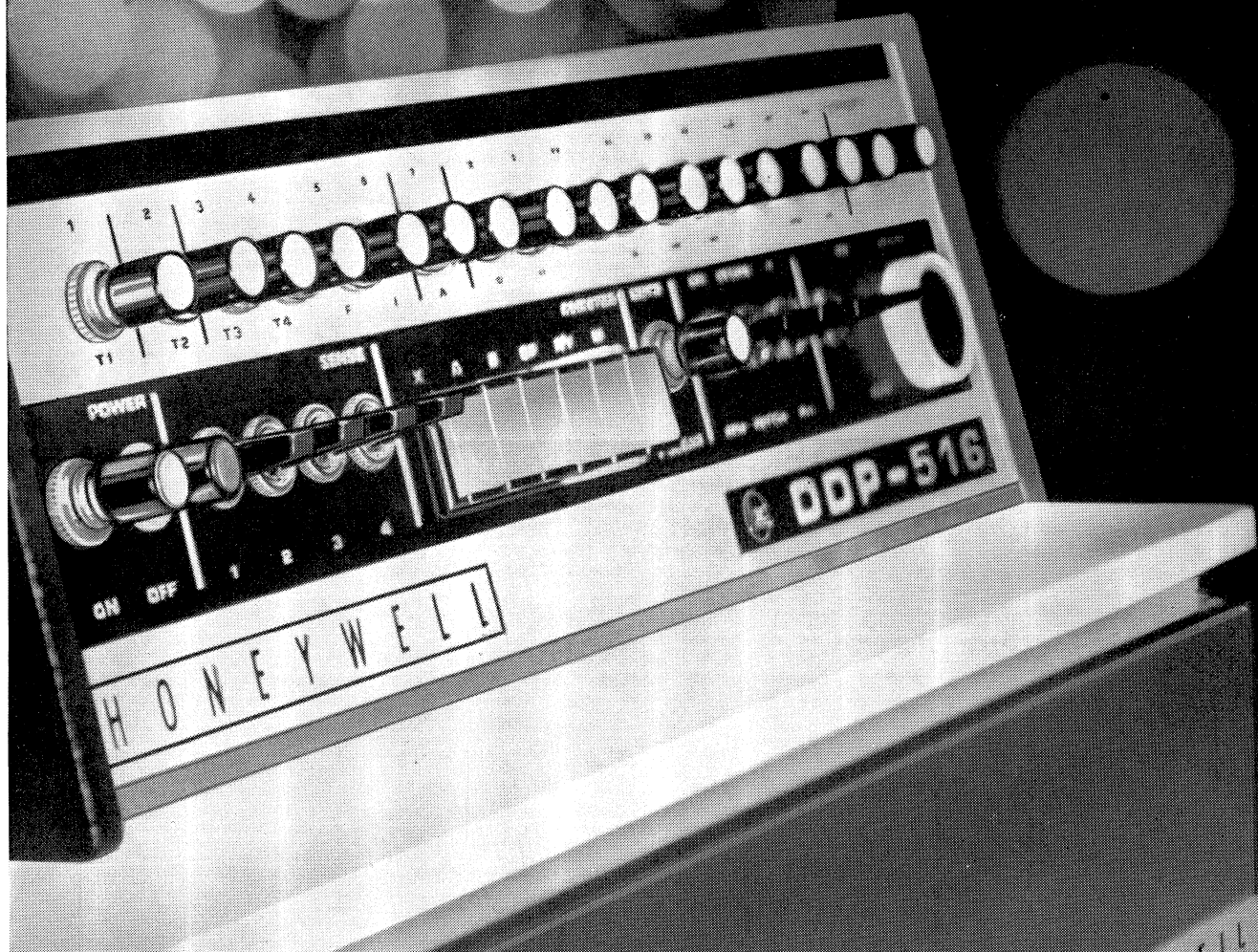
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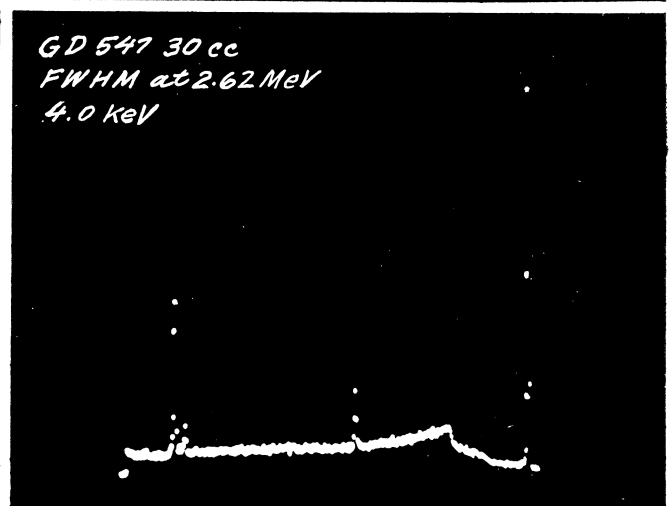
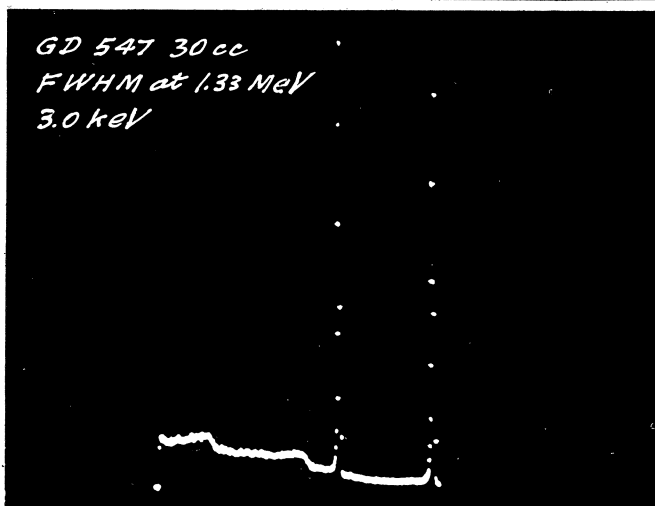
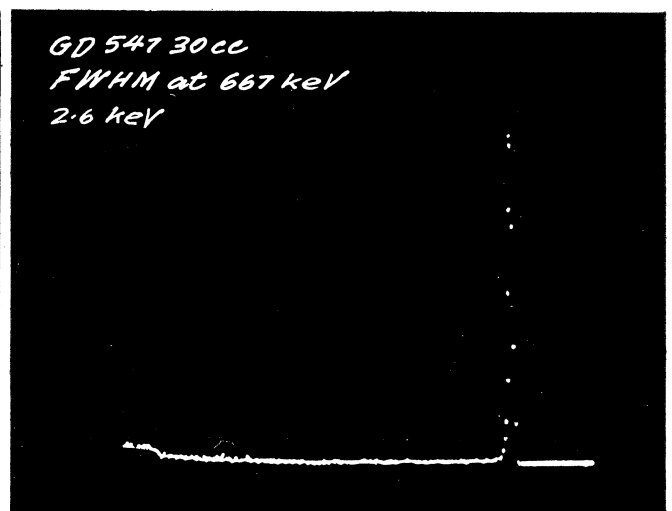
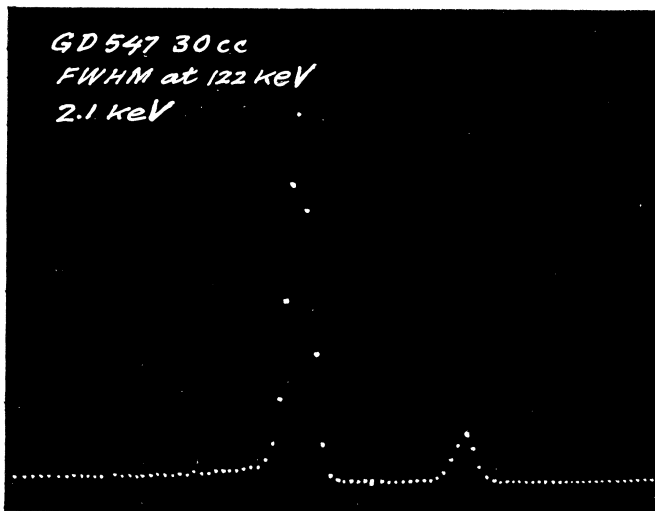
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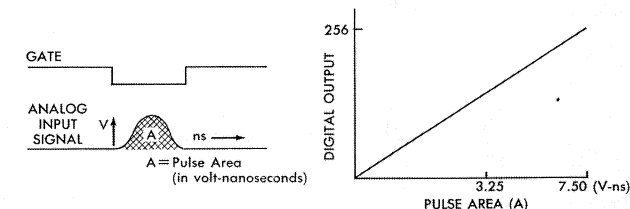
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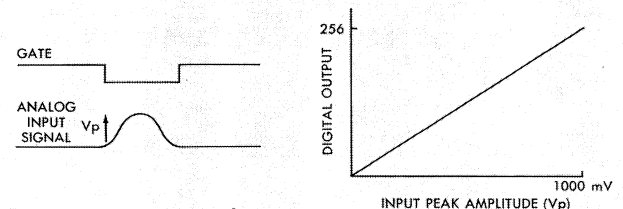
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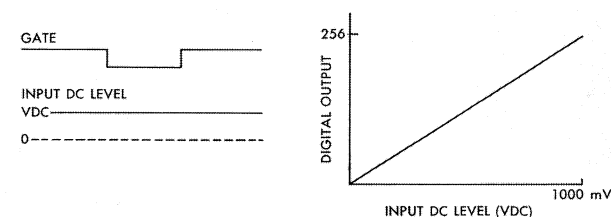
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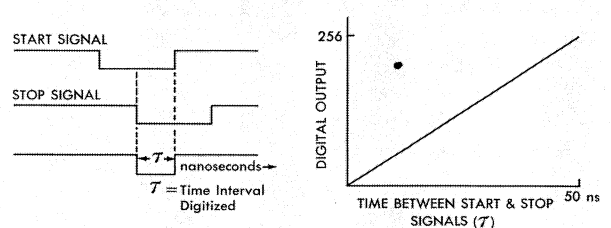
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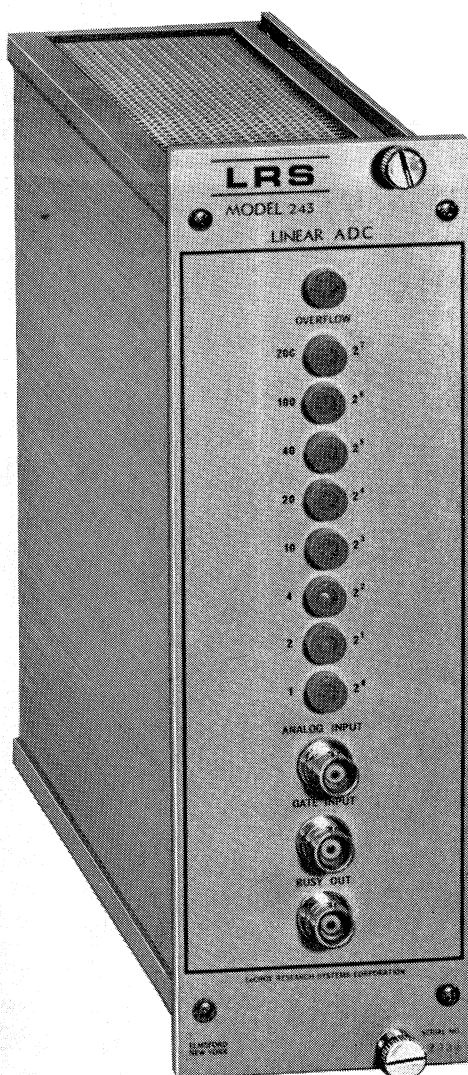
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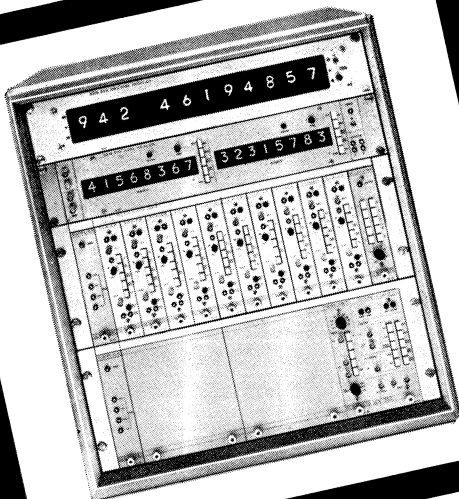
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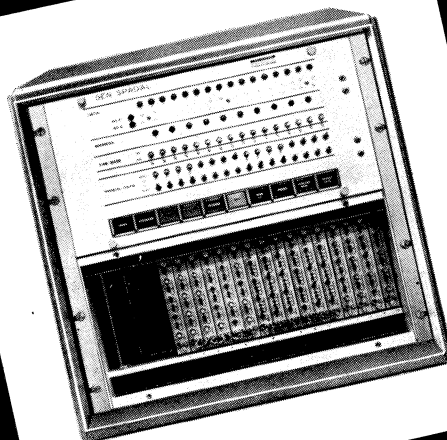


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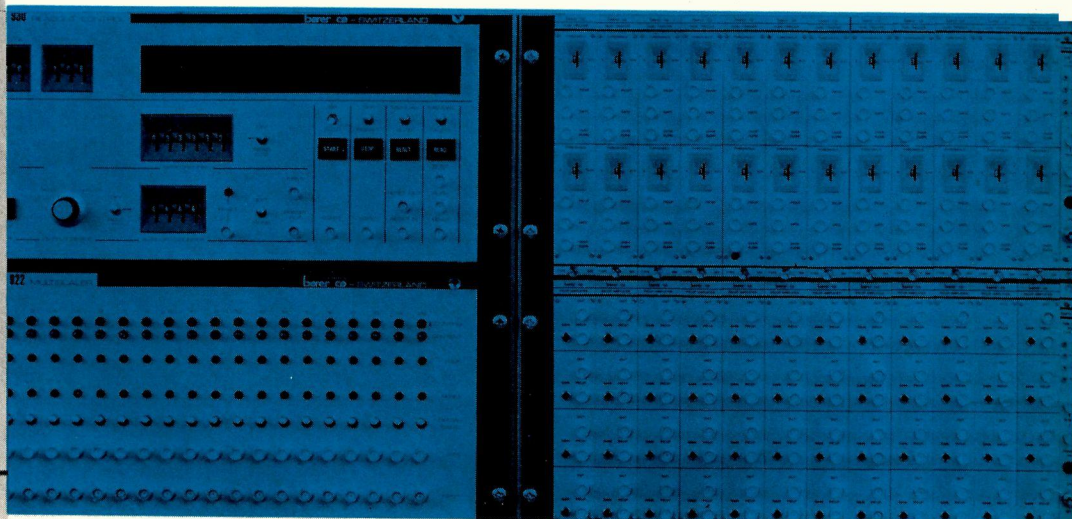
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