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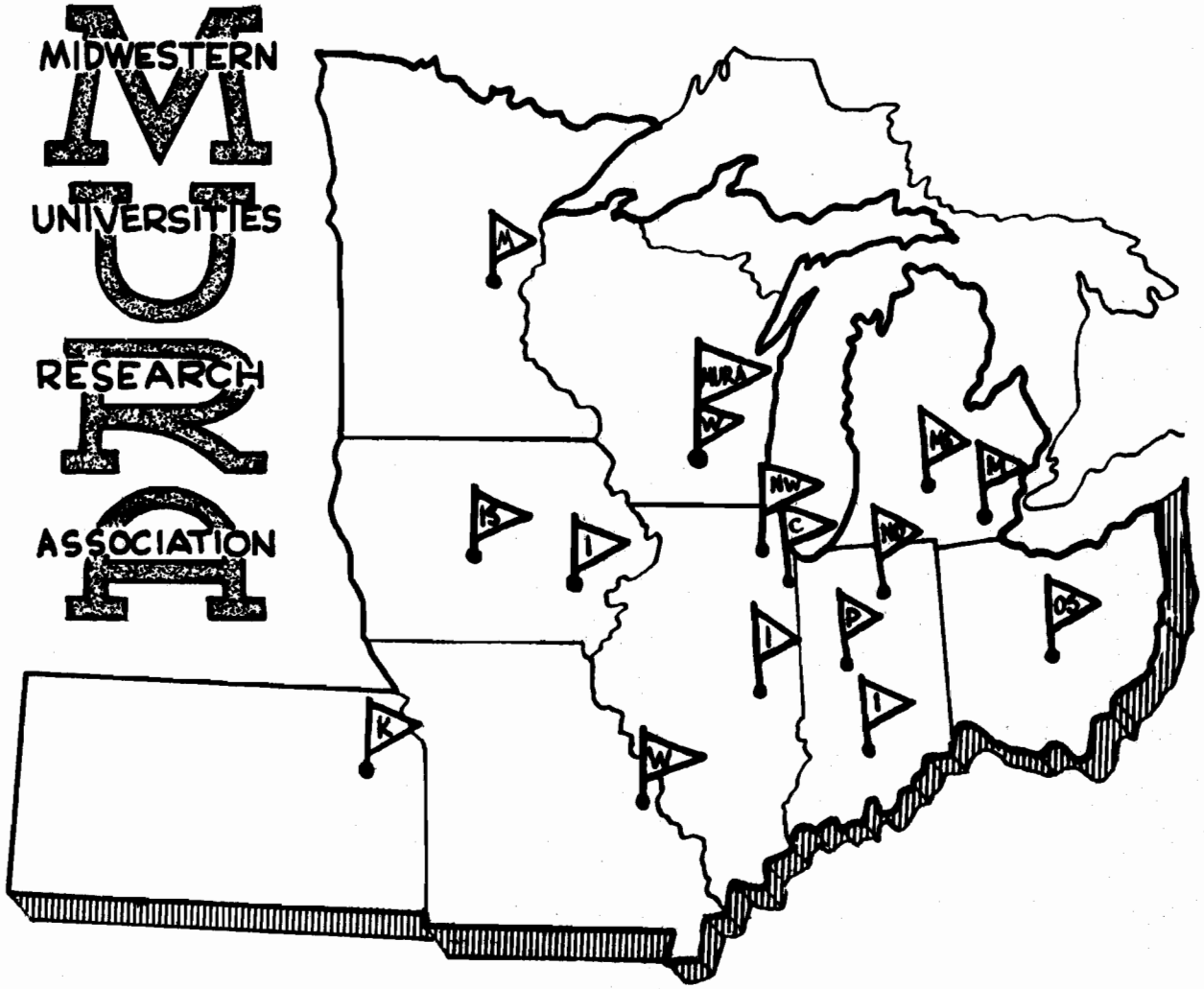

REPORT ON VISIT TO PHYSIKALISCHES STAATSINSTITUT, HAMBURG

F. E. Mills

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MIDWESTERN UNIVERSITIES RESEARCH ASSOCIATION*

2203 University Avenue, Madison, Wisconsin

REPORT ON VISIT TO PHYSIKALISCHES STAATSINSTITUT, HAMBURG

F. E. Mills

October 28, 1959

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On September 25, the writer visited the Physikalisches Staatsinstitut of Hamburg. There, under the direction of Professor W. Jentschke, a group is constructing a large A. G. Electron Synchrotron (DESY), similar to the CEA in Cambridge. The accelerator is designed to operate at energies of 6 GEV in early operation, with time-average intensities of order of 1 μamp. The addition of more rf power should allow later operation up to 7.5 GEV. The accelerator is best described in comparison with the CEA.

A simple magnetic configuration, namely FODO, allows the plus and minus magnets to be of different sizes, so that the magnet gap varies in synchronism with the ripple of the betatron oscillations. This in turn requires a much smaller stored energy for a given acceptance, and appreciably reduces the cost of the power supply. By using a larger magnetic radius, radiation losses are reduced, and also peak magnetic fields are of order 6-8 kg, obviating high field corrections due to saturation.

Injection, which is to take place in one revolution, is from a linac at an energy of 40 MEV, with an instantaneous current of 125 ma. The specified energy spread, beam size and divergence of the linac have been achieved by the supplier in other linacs.

Acceleration is to be achieved by 16 rf stations each consisting of five strongly coupled $\lambda/2$ cavities. A central 400 kw transmitter will provide power to all rf stations at the 528th harmonic of the particle revolution frequency.

It is planned to provide two large experimental halls, with the possibility of external electron beams. Also there will be two 400 m long paths for

separation and study of secondary particles.

Work is progressing at a rapid rate. Excavation for the tunnel and experimental halls is almost complete. A large laboratory building and a guest house will probably be completed within the next year. Vigorous effort is being applied to the solution of technical problems, and it seems likely that the machine will be in operation on schedule.

It must be remarked in passing that Jentschke seems to have solved the problem that plagued him most when he undertook the construction of the machine. That is, how to reconcile the idea of a large cooperative effort, requiring the responsible contribution of many people, with the European idea of an institute, with authority and responsibility lying in the hands of one professor. It is to be hoped that the steps he has taken will lead the way to similar undertakings in other European universities.