

# Liquid-helium refrigeration plant

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# EXPO 1964

The sector "Communications" at the Swiss National Exhibition in Lausanne next year contains the departments rails, water, air, roads and news. The entrance to the sector is on the main traffic artery of the Exhibition, roughly in the centre of the whole area. A sixty metre long covered bridge with a pedestrian passage on one and a rolling carpet on the other side leads to an island in the middle of an artificial lake where a sculpture of aluminium cast by the Ticinese artist Remo Rossi will be exhibited. Gangways connect the island with the various departments of communication.

The PTT, the Swiss postal authorities, are installing a telephone exchange with seven hundred connections. The use of telex machines and teleprinters is to be encouraged by special reductions. A new mobile post-office with four counters and a trailer will be stationed at Sévelin.

There will also be a circular theatre with a revolving auditorium. Sixteen hundred visitors per hour will be able to see an instructive and entertaining show on communications by way of photograph, film, trick and model, machine and apparatus. [A.T.S.]

## ARRIVAL OF TIBETAN REFUGEES IN SWITZERLAND

At the invitation of the Association for the Creation of Tibetan Homes in Switzerland, a third and fourth group of Tibetan refugees arrived at Kloten-Zurich airport after flying from India on board two Swissair planes. The third group, totalling twenty-four people, viz., a lama and ten families, has been given a permanent home in a house purchased by the Swiss Red Cross in the Canton of Grisons. The fourth group of twenty-three refugees has been taken to the mountainous region of Toggenburg (Canton of St. Gall) to a house belonging to the Association for the Creation of Tibetan Homes in Switzerland, and furnished by the Swiss Red Cross. In both regions where these new-style colonists have been received, there exist sufficient possibilities of work for the heads of the families to be able to provide for their dependants. [O.S.E.C.]

## LIQUID-HELIUM REFRIGERATION PLANT

The prototype of an industrial liquid-helium refrigeration plant was recently commissioned with success by an important firm in Winterthur. This plant from the first produced refrigeration at a temperature of about 4.5°K (-268.7°C).

Helium is the only refrigerant circulating in the closed refrigeration circuit. Important features of this new development are the gas-tight dry-piston compressors, the aluminium heat exchangers and connecting pipes, the high-vacuum insulation and the absence of a gasholder. Refrigeration is produced by two high-speed expansion turbines running in oil-lubricated bearings. Similar turbo-expanders have already proved their qualities in the large liquid-hydrogen refrigeration plant recently commissioned by the European Organization for Nuclear Research (CERN) in Geneva, also built by the same firm.

The new liquid-helium refrigeration plant is almost certainly the first of its kind to be put into service anywhere in the world. The refrigeration is produced exclusively with low-temperature turbines, without any additional cooling, for instance by liquid nitrogen and liquid hydrogen.

Plants of this kind are required for various new cryogenic applications as well as being useful aids to research in this field, which is rapidly gaining in importance in several connections. Domains in which the plants are of special interest are nuclear, solid-state and plasma physics, space research, rocketry, high vacuum techniques, and, above all, modern electrotechnical developments (superconductivity). [O.S.E.C.]



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