

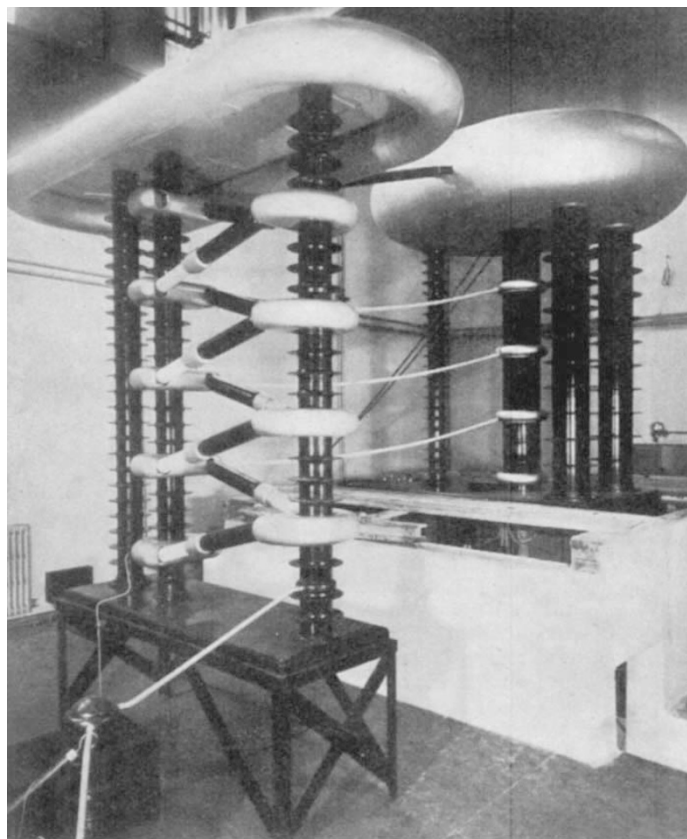
## THE 800-kV. NEUTRON GENERATOR OF THE UNIVERSITY OF ISTANBUL

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FOR nuclear research purposes, a Philips neutron generator of 800/650 kV. was installed in October last in the General Physics Department of the University of Istanbul. The high-tension equipment had been delivered in May 1949; a general view of the installation is given in the accompanying illustration. The platform on which the acceleration tube, the oil-immersed measuring resistance (1,684 M $\Omega$ ) and the two columns supporting the top stand is carried on steel girders resting on concrete walls, and the working room is to be seen under the platform.

The high-tension generator presents some last improvements<sup>1</sup>. The valves are heated by the interposition of small transformers fed by high-frequency current (250 kc./sec.). The oscillator is of the type



TB.2-5/300 with variable condenser and variable grid resistance. The small autotransformers have cores of 'Ferroxcube', consisting of two E-shaped massive pieces. The current in the secondary is 3.5 amp. The small differences between the average current and the heating current of the valves are regulated by changing the connexions on the primary winding. The apparatus provides target currents of

$\sim 170$   $\mu$ amp. (protons or deuterons) at a voltage of 650 kV.

In order to have an idea of the neutron (Be + D) intensity, we compared the activity of a narrow silver ribbon (0.05 mm. thick) irradiated by the slow neutrons (paraffin) of the apparatus (600 kV.;  $\sim 130$   $\mu$ amp.) and the activity of the same silver ribbon irradiated under the same conditions with the neutrons of a radium-beryllium source (80 mC.). We find that the (Be + D) source is equivalent roughly to 5 gm. of (Ra + Be).

I should like to express my thanks to Messrs. Philips for their care and for material generosity during the installation.

<sup>1</sup> Douma, Tj., and Brekoo, H. P. J., *Revue Technique Philips*, 11, 123 (1949).

## SKULL OF THE FETAL NARWHAL

A RECENTLY published account, by Dr. Nellie B. Eales, of two foetal narwhal skulls\* should appeal alike to the embryologist and general student of the Cetacea. A detailed description is given of the chondrocranium, osteocranium and teeth of a smaller (137 mm.) specimen, supplemented by a briefer survey of the skull of a larger (150 mm.) specimen. Although little different in size, the larger specimen showed considerable advance in development compared with the smaller, evinced by an elongation of the skull, a dorsal movement of the blow-hole position, doming of the cranium and a spreading of the membrane bones.

Figures of wax-plate reconstructions of the membranous labyrinth bring out most clearly the enormous relative size of the cochlea and, by implication, its importance to animals the environmental impressions of which must for the most part be auditory.

The discovery of hair germs in the foetus of a species so long and often quoted as lacking this feature is noteworthy; so also is the fact that, including the tusk on the left side (which in the male may grow to a length of some eight feet) and its reduced fellow in the right maxilla, the foetus shows evidence of the presence of six teeth on each side of the upper jaw and two on each side of the lower jaw.

In her comparison of the narwhal foetuses with those of other cetaceans and with other orders of mammals, the author is careful not to come to premature conclusions about affinities on the limited material so far available, but uses her findings in the inter-parietal region to question the view of Slepzov that reptilian features persist in the developing odontocete skull. Very recent and independently pursued serological and histological researches suggest that the affinities of the Cetacea are rather with the Artiodactyla and to this extent justify Dr. Eales's objection to Slepzov's theory.

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\* The Skull of the Foetal Narwhal, *Monodon monoceros* L. By Dr. Nellie B. Eales. *Phil. Trans. Roy. Soc., B*, 235, No. 621, pp. 1-33.