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THE AUSTRALIAN NATIONAL UNIVERSITY
RESEARCH SCHOOL OF PHYSICAL SCIENCES

PHYSICS OF IONIZED GASES UNIT

Annual Report for 1965

Staff

Professor: M.L. Oliphant, K.B.E., F.R.S.

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Construction of the first form of apparatus for precision observation of charge exchange and other phenomena with ions passing through gases and colliding with solid surfaces at various energies, was completed before Professor Oliphant went on study leave in April. During his absence the electrical circuits were installed and some preliminary observations of the behaviour of the ion source were made. As a result, the focussing system for the ion beam was modified and some changes were made in the electrical circuits.

After Professor Oliphant's return early in October, further tests of the ion source revealed inherent weaknesses. A new source was designed and made, the magnetic deflecting channel, which developed a vacuum leak, was replaced, adjustments of direction of the ion beam were installed, and the protection of high voltage circuits against surges was improved greatly. With these modifications, it is hoped that successful experiments can be commenced early in the new year.

Some new ideas for the acceleration of charged particles to very high energies, using superconducting, twisted, quadrupole focussing, were developed, and were discussed at Academic City (Siberia) and in Chicago and Berkeley, U.S.A.

During his study leave, Professor Oliphant was able to obtain much valuable information about various techniques employed in the experiments.

Publications

Oliphant, M. L. - "Science and Technology in China and the U.S.S.R."
Jn. of the Institution of Engineers, Australia, Vol. 37,
No. 12, Dec. 1965, pp. N111 - 114.
