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SUBMISSION FOR THE DEGREE OF
DOCTOR OF SCIENCE

The published works which follow are submitted for the degree of Doctor of Science. They are divided into three groups:-

- I. Studies of the ionospheric F region
- II. Studies of Aurorae and Airglow
- and III. Miscellaneous studies.

The state of knowledge in the field prior to publication of each paper, and the new knowledge which the paper has contributed are detailed in this preface.

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I. STUDIES OF THE IONOSPHERIC F REGION

- (a) "The equatorial F region of the ionosphere"
Journal of Atmospheric and Terrestrial Physics
18, 89 (1960).
- (b) "Universal-time control of the arctic and antarctic
F region"
Journal of Geophysical Research 67, 1823 (1962).
- (c) "Lunar variations in the ionosphere"
Australian Journal of Physics 2, 112 (1956).
- (d) "The behaviour of a Chapman layer in the night F₂
region of the ionosphere"
Australian Journal of Physics 2, 436 (1956).
- (e) "Luni-solar variations in the ionosphere"
Australian Journal of Physics, (In print).
Accepted for publication in March 1963 issue.
- (f) "Computations of electron density distributions
in the ionosphere making full allowance for the
geomagnetic field"
Journal of Geophysical Research 63, 491 (1958).

II. STUDIES OF AURORAE AND AIRGLOW

- (a) "Photometric observations of subvisual red auroral arcs at middle latitudes"
Australian Journal of Physics 12, 197 (1959).
- (b) "Observation of a 6300Å arc in France, the United States and Australia" (with D.Barbier and F.E.Roach)
Annales de Geophysique 18, 390 (1962).
- (c) "Simultaneous occurrence of sub-visual aurorae and radio bursts on 4.6 Kc/s"
Nature 183, 1619, (1959).
- (d) "Polarization of the red oxygen line"
Planetary and Space Science 1, 112, (1959).
- (e) "Photometric observations of 5577A and 6300A airglow during the I.G.Y."
Australian Journal of Physics 13, 633 (1960).

III. MISCELLANEOUS STUDIES

- (a) "The measurement of the drift velocity of electrons through gases by the electron shutter method"
Australian Journal of Physics 10, 54 (1957).

- (b) "Some studies of geomagnetic micropulsations"
Journal of Geophysical Research 65, 2087 (1961).