

It is not strictly true that the energy levels of the hydrogen atom depend only on the quantum number n , as implied by Eq. (6). We saw in discussing the Bohr theory (page 86) that certain levels must be split into two or more

7.3 FINE STRUCTURE IN THE HYDROGEN SPECTRUM

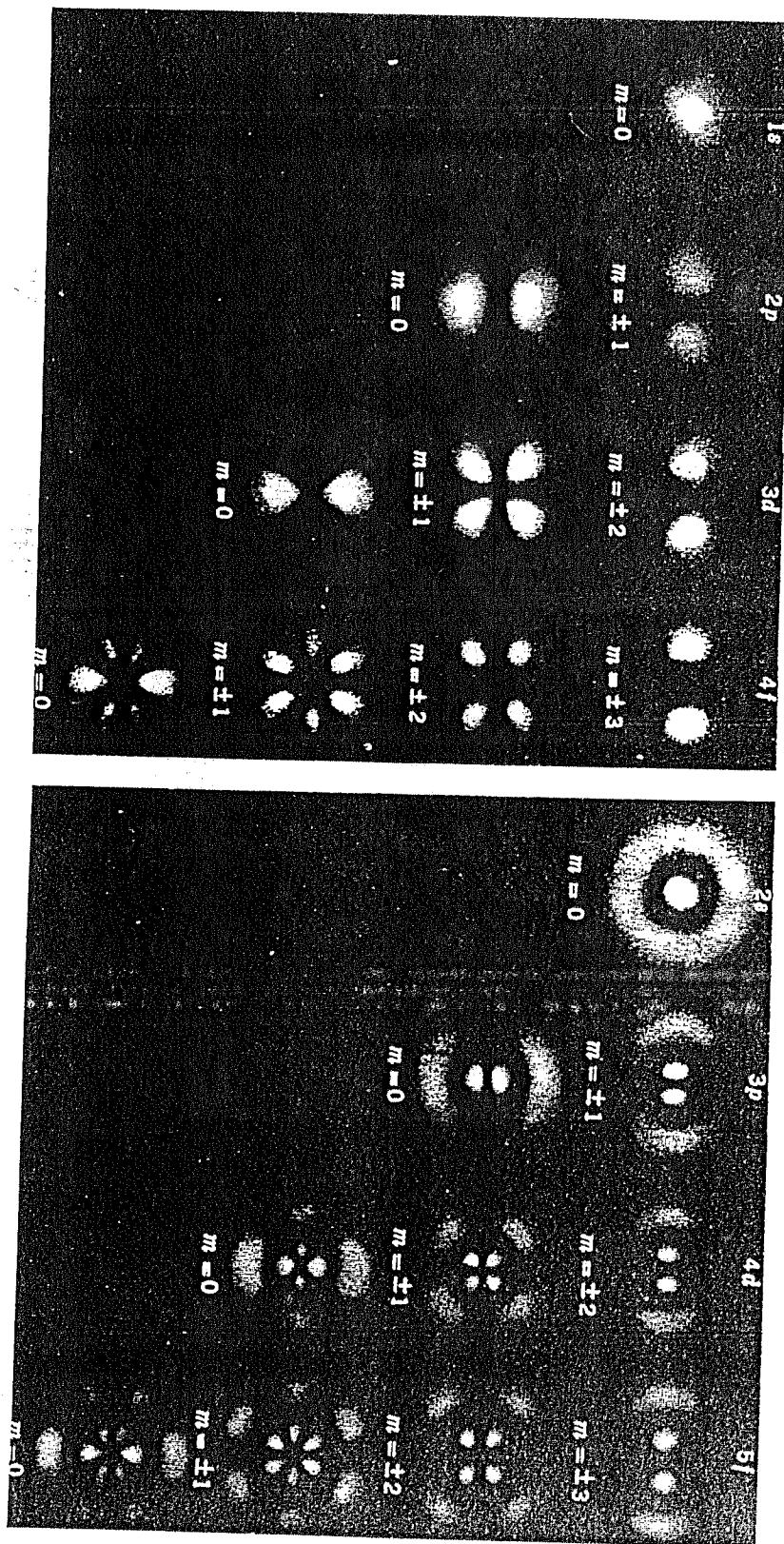


Fig. 3. Photographic representation of the electron probability density distribution $u^ u$ for several energy eigenstates. These may be regarded as sectional views of the distributions in a plane containing the polar axis which is vertical and in the plane of the paper. The scale varies from figure to figure. [From "Principles of Modern Physics" by R. B. Leighton. Copyright McGraw-Hill, New York, 1959. Used by permission of McGraw-Hill Book Company.]*