the research laboratory. The bombardment of specimens with high-speed electrons produces changes in protoplasm, and in molecules. Entomologists have remarked on shrinkage, evolution of gas, discoloration, and increased friability of their specimens. As the specimen for study must be placed in a high vacuum it must, therefore, be dry. Great difficulty is experienced in viewing anything but 'dead' specimens, and in consequence, movement must inevitably be 'frozen', and require a number of successive and similar operations to show progressive action. The objects to be examined must be extremely thin.

Some Further Developments

Due to the very small aperture of the electron rays, the electron microscope shows a surprisingly large depth of focus. Electron stereomicroscopy has been suggested by E. Ruska. M. v. Ardenne[18] has further developed this idea, and introduces in his electron microscope a particular object carrier which can be tilted by a few degrees between two successive exposures. A vivid impression of solidity is produced if the two corresponding photographs are examined under a stereoscope.

v. Ardenne has successfully applied dark-ground illumination and obtained resolving powers down to 5×10^{-7} cm., and he discusses[19] in this connexion the possibility of viewing single atoms, and studying their distribution in the object plane. There are, however, great practical difficulties; for example, the exposure time would have to be increased more than 1,000 times if ultra-microscopical methods were to be introduced.

O. Scherzer[20] discusses the possibility of improving the resolving power of the ordinary electron microscope with direct illumination by an improvement of the electron lenses leading to larger numerical apertures. He mentions in this connexion the practicability of correcting spherical aberration by introducing space charges into the lens. F. H. Nicoll in his patent proposal of 1936 discusses the introduction of an electron mirror into the instrument. As it is feasible to construct mirrors with negative aberration, a useful opportunity of correcting the mirror-microscope is given.

The most direct method of improving the resolving power is to use appreciably greater electron energies, and thus shorter wave-lengths. There is an upper limit to what we can hope for in this direction.

After the War is ended, there should be great developments in television, and some of this research work will be employed in improving the electron microscope.

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NEWS and VIEWS

Dr. W. K. Gregory

DR. W. K. GREGORY has recently retired under an age limit from the staff of the American Museum of Natural History. For some forty years he occupied a very special place in that great institution, for his knowledge of comparative anatomy extended over the whole range of vertebrates, both recent and fossil, and his philosophical mind led him to make wide ranging comparisons and detailed analyses of structure which have contributed very greatly to our understanding of structure and especially of the course of evolutionary processes. His early works on Tritubucular teeth and on the orders of mammals were of great importance, and were but the harbingers of many others which have since appeared. During the past twenty years his immense experience of mammalian structure has enabled him to contribute much to our understanding of the significance of the many fossil human skulls which have become known, and he has at the same time devoted much attention to the detailed structure of modern fish. But Dr. Gregory's retirement is only from his formal position; relieved of administration he may, we hope, continue even more actively his own researches.

Prof. James Drever

PROF. JAMES DREVER has recently retired from the chair of psychology in the University of Edinburgh, which he has held since its foundation in 1931. In 1918 he was elected to the Coombe lectureship in psychology at Edinburgh, and in 1924 he became University reader. When lecturer he had eighty students, and an assistant to help him. Shortly before the present War, the number of his students had increased to nearly six hundred, and his staff comprised a reader, two lecturers and four instructors. Prof. Drever graduated in arts in Edinburgh in 1893 and spent two years in studying medicine. Owing, however, to various difficulties he was then compelled to become a schoolmaster. But in 1907 he became assistant to the professor of education at Edinburgh, where he founded the Educational Laboratory, taking a keen interest in problems relating to human instinct, in the treatment of delinquent and difficult children, and in the institution of the degree of bachelor of education and of postgraduate psychological research for students of education. These early efforts led to his later work on the psychological treatment of the psycho-neuroses, on developing performance tests of