Birmingham. Another is a high-precision couette viscometer where electrostatic forces are used to supply the restoring torque.

The Spectroscopy Section occupies eight laboratories in the basement and sub-basement of the main building. The work of the section centres around the measurement of the refractive index of gases and liquids in the infra-red. The measurement of dispersion in regions of absorption is a new approach to the problem of measuring intensities in the infra-red. It yields the same information—by an entirely independent method and possibly with improved accuracy.

Located in a laboratory in the sub-basement to provide a stable environment is the large spectrometer-refractometer for the measurement of the dispersion of gases. Designed and built at the Institute, it comprises a high-resolution grating spectrometer and a hollow-prism refractometer of very high sensitivity (1×10^{-7} index units or better); the instrument is evacuated to eliminate atmospheric absorption. Because of the high resolution and sensitivity, the refractive index can be measured through the individual lines of the rotation–vibration bands of a gas. Measurements are being made at present on diatomic gases in the 1·5 micron region and will soon be extended to longer wave-lengths.

To measure dispersion in absorbing liquids, a Perkin–Elmer infra-red spectrometer is being used, together with a specially built critical angle refractometer. Because of the complications introduced by the absorption, the Weizmann Institute electronic computer is used to reduce the results. A method has now been developed for measuring refractive indices of moderately absorbing liquids.

Also available are a large and medium quartz spectrograph for spectrographic analysis and research in the visible and ultra-violet.

The Nuclear Magnetic Resonance Section occupies four laboratories, including chemical preparation rooms. The major piece of equipment is the high-resolution spectrometer which was constructed at the Institute. It utilizes a permanent magnet with a field strength of 7,100 oersteds. The magnet is provided with field homogenizing current shims and a sample spinning turbine. The residual inhomogeneity on a sample of 0·2 cubic centimetre is 10^{-4} oersteds or less. The radio-frequency equipment is tuned to proton frequency only and a specially designed pulsing system eliminates balancing problems. A spin-echo apparatus and unit for solid-state work (a 4-in. electromagnet and Pound spectrometer) are also available.

The nuclear magnetic resonance method is being used to study the rates and mechanisms of very fast proton exchange reactions in solution. The shape of the lines is related to the mean life-time of the molecules between successive proton jumps; the measurements, therefore, enable precise kinetic data to be obtained for very high speed reactions. The reactions being studied are the *p*H-dependent proton exchange in solutions of amines, amides, hydrogen peroxide, water, etc. Work is also being done on the magnitudes and signs of spin–spin constants in liquids, on double quantum transitions, on the Maser effect and on a general theory of exchange narrowing.

NEWS and VIEWS

Applied Electron Physics at the Imperial College of Science and Technology: Prof. Dennis Gabor, F.R.S.

Dr. Dennis Gabor, who has been appointed to a newly created university chair of applied electron physics tenable at the Imperial College of Science and Technology, London, was born in Budapest in 1900. He studied electrical engineering in Budapest and Berlin-Charlottenburg, and after taking the Dr.Ing. degree entered the Siemens-Halske organization, Berlin, as research engineer in 1927. In 1934 he joined the Research Laboratory of the British Thomson-Houston Co., Rugby, and in 1949 he became Mullard reader in electronics in the Department of Electrical Engineering at the Imperial College. He was elected a Fellow of the Royal Society in 1956. Dr. Gabor's research work has covered an unusually wide field and has been characterized by a remarkable inventiveness. Few scientists can have attempted the impossible so frequently or have been so little discouraged by failure to achieve it. After working on high-speed cathode-ray oscillographs, gas-discharge lamps with positive characteristic, light-amplifiers and three-dimensional cinematography, he was attracted in 1944 by the general problem of transmitting information. He created a mathematical framework modelled on quantum theory, now known as 'structural' communication theory, which bridged the gap between the time-description and the Fourier-description of signals, and followed this by a composite of experimental excursions into wave-band-saving invention and of theoretical work on the application of communication theory to physics, in particular to physical optics. He later devised a new method of obtaining optical images by 'wave-front reconstruction' which he still hopes might be applied to improving the resolution of electron microscopes. He is at present engaged on the development of a thin, flat, television tube for application to colour television. His many admirers will wish him well in this difficult undertaking.

Geography at Birmingham: Prof. R. H. Kinvig

The retirement of Prof. R. H. Kinvig marks the end of the first thirty-four years of the Department of Geography at the University of Birmingham. He was appointed there as reader in 1924 to establish the Department, and under his guidance it has become a flourishing honours school from which have graduated several present-day holders of chairs, and a centre for geographical research, especially on the Midlands, with a fine map collection specializing in maps of Birmingham and its region. A Liverpudlian, Kinvig early developed a life-long interest in the Isle of Man, and his "History of the Isle of Man" (1944) shows his wide interest in both historical and human geography. At Birmingham he initiated local studies by his essay on the North-west Midlands for the volume on Great Britain prepared for the International Geographical Union Congress of 1928, and