

haphazard manner; it is reported that when this type of mosaic is used for cinematography, the superimposition of successive pictures built up of colour elements arranged in entirely different ways gives rise to a very unpleasant effect known as 'boiling', every part of the picture on the screen appearing to be in rapid internal movement. With the Dufay regular mosaic this trouble does not occur. The success of a process for colour cinematography depends on a variety of factors besides its power to yield pleasing coloured pictures. Two very important desiderata are that films should be capable of projection with normal projectors as used for ordinary black and white pictures, and they must be capable of yielding coloured duplicates by a process of automatic printing. In respect of the first of these requirements, the Spicer-Dufay process has already achieved its object and the luminosity of the projected pictures is at least adequate, while a method of duplicating by machine printing is now available. The process is therefore one in which technical achievement is already very high.

Royal Institution and Davy Faraday Laboratory

THE annual meeting of the Royal Institution was held on Tuesday, May 1, under the chairmanship of the treasurer, Sir Robert Robertson. The Visitors' Report for the year 1933 showed a substantial addition to the membership, the total (1020) at the end of the year, including honorary members, members and associate subscribers, being the highest reached since the War. The following officers were re-elected: *President*, The Right Hon. Lord Eustace Percy; *Treasurer*, Sir Robert Robertson; *Secretary*, Major Charles E. S. Phillips. The fulfilment by the Trustees of the Rockefeller Foundation of their promise, made in 1930, to give £20,000 for endowment of research in the Davy Faraday Laboratory, was publicly announced some months ago. In the Visitors' Report reference is made to this and other gifts to the Research Endowment Fund which has now been established at the Institution; and the Report of the Davy Faraday Laboratory Committee, which is printed with the Visitors' Report, gives interesting evidence of the work which is in progress with the funds now available from this and other sources.

THE majority of the workers in the Davy Faraday Laboratory are engaged, under the direction of Sir William Bragg, "in a combined effort to map out exactly the spatial distribution of the atoms in organic molecules", using X-ray methods. An X-ray tube with revolving anti-cathode has been in regular use now for about two years, and a much larger tube, to operate up to about 50 kw., is in the experimental stages. With these powerful sources, very small crystals can be used, and in recent work successful photographs have been obtained with crystals weighing less than one twenty-fifth of a milligram. From large numbers of reflection measurements calculations can be made, using a method based on the Fourier principle, of the electron density at

every point within the crystal. "The result is given in the form of contour maps. Each contour line shows the electron density expressed in whole numbers of electrons per cubic Angstrom unit. The map is in general accurate to the width of a line." This interesting method of mapping the molecules is illustrated in the Report by a contour map of the durenene molecule, taken from a recent paper by Dr. J. M. Robertson, one of the workers in the Laboratory.

Rotation of the Earth

ON May 1, a public lecture was delivered at Oxford by Dr. J. K. Fotheringham, reader in ancient astronomy and chronology in the University, on the rotation of the earth. Dr. Fotheringham spoke of the importance of the fact of rotation in regard to such practical matters as the alternation of day and night, the march of the seasons, the tides, and the measurement of time. Some of the Greeks, perhaps including Plato, held the Pythagorean view that the earth and not the sky rotated; but in either case the rotation was generally held to be uniform. The fact of precession was known to Hipparchus, but may be an older discovery. A further disturbance of uniformity, namely, nutation, with a period of 19 years, was determined by Bradley at Oxford. Since his time, further changes have been measured, such as a shifting of the position of the pole in relation to the earth's figure; this has a period of 15 months and may affect latitude to the extent of two-fifths of a second of arc. A change in the speed of rotation is no doubt a real physical fact, "the day is getting longer by one second in many thousand years". The apparent acceleration of the sun is modified by that of the moon. Fresh facts bearing upon this have been collected by Dr. Fotheringham and others, but their full explanation awaits further research.

Chemical Patents Committee

A CHEMICAL PATENTS COMMITTEE of the Department of Scientific and Industrial Research has been appointed to advise on the patenting and exploitation of results of the Department's chemical researches that may have industrial possibilities. The Committee is the result of negotiations that have been taking place for some time between the Department and various industrial organisations with the object of promoting closer co-operation and of avoiding unnecessary overlapping. It is hoped that one result of the Committee's advice will be that research results may be brought to the notice of industry and translated into practice at an earlier stage than hitherto, and under conditions that will take existing industrial activities into account. Sir Frank Smith, secretary of the Department of Scientific and Industrial Research, will act as chairman, and in addition to departmental members, the Committee will include: Mr. F. H. Carr and Mr. J. Davidson Pratt, representing the Association of British Chemical Manufacturers, and Mr. J. Arthur Reavell, representing the British Chemical Plant Manufacturers Association.