

first four or five hours of its flight. Two of the occupants were unwell and in dropping rapidly through cloud, the collection of ice on the gondola, together with that falling on it from the lower part of the balloon structure itself, and other chafing actions, eventually parted the gondola from the balloon. The chief object of the flights, organised by the Society for Aviation and Chemical Warfare, was to investigate cosmic rays and it has been said that thirty instruments for various purposes were being carried. The balloon expanded had a diameter of 115 ft. and the whole weighed 2 tons. The metal parts were of rustless steel. The lowest pressure record of 50 mm. (61,000 ft.) for a balloon rests at present with the stratostat *U.S.S.R.* piloted by M. Prokofiev last September.

Photographs and Early Maps of the Fenland of East Anglia

In the Art Gallery of Messrs. W. Heffer and Sons, Ltd., Cambridge, there is an exhibition of ancient maps of the Fenland and of recent aerial photography of the same region. This exhibition, which will be open until February 12, directs attention to the activities of the organising body, the Fenland Research Committee, which was founded under the presidency of Prof. A. C. Seward in 1932, for promoting the intensive investigation of the complex history of the Fenland basin. The members represent the interests of archaeological, botanical, geological and historical science, co-operating closely in attacking the very complex problems of the developmental history of the Fenland basin. The members represent the interests of archaeological, botanical, geological and historical science, co-operating closely in attacking the very complex problems of the developmental history of the Fenland basin. Co-ordinated excavations have already been made and a number of publications have appeared. One extremely important side of the work of the Committee is the aerial photography of the entire region. This reveals on the silt area of the fens beside the Wash a hitherto unsuspected density of remains of the Romano-British occupation and of later times. Field systems, dwellings, river-beds, droves and creeks are visible in great profusion and clarity, and the examination, interpretation and mapping of these remains will be a major activity of the Committee for some time to come. The preparation of suitable field maps for use in this task is a heavy charge on the Committee and the exhibition is intended to stimulate public assistance to the provision of part or all of the sum of £500 required.

Beam Wireless Communication with China

ON February 3 a new Marconi beam wireless station was opened at Chenju, near Shanghai, to give direct radio communication with Great Britain, and it is anticipated that within the next year Shanghai will be in telephonic communication with London. This will add yet another link to the already widespread ramifications of the international radio telephone service available from London. In announcing the opening of the new station, the *Times* recalled the fact that the first wireless station in China was erected by that journal at Wei-hai-wei in 1904 in order to receive dispatches during the Russo-Japanese war from its correspondents on board a

steamer specially chartered for the purpose. The Marconi Co. later undertook the establishment of communication for the Chinese Government, and the recent extension referred to above is due to the enterprise of the Ministry of Communications. The whole of the technical material used for the Chenju station was purchased in Great Britain with funds from the British Boxer indemnity, and Chinese engineers have co-operated most effectively in the installation.

Electric Discharge Lamps

SOME interesting characteristics of the new electric discharge lamps were described and demonstrated in a lecture given before the North-West Area Section of the Illuminating Engineering Society at Manchester on January 30 by Mr. H. R. Ruff, of the Research Department of the British Thomson Houston Co., at Rugby. Mr. Ruff showed that highly-coloured wall papers are completely robbed of their colour by a form of lamp using sodium vapour, appearing as though executed only in black, white and grey. On the other hand, an electric discharge lamp using mercury vapour was shown to contain strong yellow, green and blue elements—with the result that coloured papers show up quite well by this light. Numerous installations of these lamps are being made in streets throughout Great Britain, and they are also proving to have interesting possibilities for use in factories. A certain amount of care is, however, necessary when applying them to processes with revolving machinery, owing to the formation of stroboscopic effects, by which wheels appear to be turning in a contrary direction. These lamps provide about 16,000 lumens for a consumption of 400 watts and can be adapted to ordinary supply circuits using either alternating or direct currents, although the former is more convenient. The efficiency is $2\frac{1}{2}$ –3 times that of a filament lamp. A new form of vacuum lamp containing mercury which emits a moderate amount of ultra-violet light and is thus useful from the hygienic point of view was also shown.

Constitution of the Upper Atmosphere

PRESENT conceptions of the physical and chemical constitution of the upper atmosphere were summarised in a most entertaining way by Dr. G. C. Simpson in the twenty-fourth Bedson lecture delivered at Armstrong College, Newcastle-upon-Tyne, on February 2. Dr. Simpson dealt first with the thickness of the troposphere over the earth's surface, and the temperature distribution within it, and throughout the stratosphere, including the discoveries of Lindemann and Dobson since 1920 from observations of meteors, also ozone concentration and distribution relative to (surface) atmospheric pressure. The evidence of sound wave and wireless wave reflections was then reviewed, and finally the evidence from auroral observations on the influence of sunlight, and on the composition of the atmosphere. Clouds in the stratosphere, and the dissociation of oxygen and nitrogen molecules at 100 km. and above were