acids, an integral part of the indigo problem (1877).

On coming to Newcastle, Bedson showed courage in linking his chemical fortunes with those of the district by attacking the chemistry of coal. His pioneering work included the demonstration of the presence of paraffins up to pentane, the investigation of the wet oxidation of coal and the solvent action of pyridine. These methods have in later days proved of the utmost importance in the hands of Bone and Fischer. Other important aspects of his work were connected with the explosive nature of coal dust in air and the composition of colliery waters. He also demonstrated the presence of argon in rock salt, and as a regular lecture experiment he showed the rhythmic precipitation of copper ferrocyanide in gelatine many years before its rediscovery by Liesegang. With Charleton-Williams he translated Lothar Meyer's "Modern Theories of Chemistry" and in 1896 gave the Lothar Meyer Memorial Lecture in London.

Up to the end of last century, scarcely any student entering the College had any prior knowledge of chemistry, and as the numbers were growing rapidly, the staffing of his department invariably lagged behind the number of students to be instructed. Members of staff taught for thirty-five hours a week, including some evenings, and were fortunate to get Wednesday afternoon free for research! By contrasting these conditions with those obtaining in universities to-day, Bedson's original work constitutes a remarkable achievement. In addition to the above handicap, he became necessarily more involved in the administration of the rapidly growing institution, of which he became vice-principal; he was also later a justice of the peace.

Although of small stature, Bedson was of striking personality and a very successful teacher. His lectures, on the preparation of which he spared neither time nor trouble, were clear, logical and well illustrated by experiments. Cheerful and ever humorous, he was yet a strict disciplinarian of the old school, but was nevertheless loved and respected by his students, to whom he was affectionately known as 'Peter'. It is, however, alleged that on one occasion an errant student on being questioned by his professor replied that he was seeking salt-petre! His chief recreation was music. He was a competent violinist and an ardent concert-goer.

He is survived by his lifelong helpmeet, Mrs. Bedson, and one son and one daughter, the former an eminent bacteriologist.

A few years after his retirement his successors founded "The Bedson Club" in honour of the man who had done so much to establish the School of Chemistry in the University of Durham. So his name goes on, though we mourn the loss of an able chemist and a father to King's College.

In the preparation of this note I have had the invaluable help of Dr. J. A. Smythe, for long a member of Prof. Bedson's staff. G. R. CLEMO.

The Rev. E. N. Neumann, S.J.

THE REV. EMMANUEL NAVARRO NEUMANN, *S.J.*, died on January 30, 1941, according to the Memorabilia Societatis Jesu of December 1941 (delayed on account of the War). The greater part of his research studies and labours was spent in the field of geodynamics. He operated observatories, issued bulletins, developed seismographs and published more than three hundred separate articles on seismology. With other Jesuit men of science he was exiled from Spain by the anti-clerical Government in 1931, and resided in Italy for some time. On August 11, 1938, the Cartuja (Granada) Observatory was restored to the Jesuits and Father Navarro Neumann was present. He was in poor health and experienced much physical suffering for many years, and in 1939 retired from active scientific work.

WE regret to announce the following deaths:

Dr. T. McFadden, senior demonstrator in physics at the Queen's University, Belfast, on March 25, aged twenty-six.

Dr. H. G. Rule, reader in chemistry in the University of Edinburgh, on March 15, aged fifty-five.

Prof. Warrington Yorke, F.R.S., Alfred Jones professor of tropical medicine in the University of Liverpool, on April 24, aged sixty.

NEWS and VIEWS

Ionospheric Variations during the Sunspot Cycle

IN a lecture entitled "Radio Exploration of the Ionosphere", delivered before the Wireless Section of the Institution of Electrical Engineers on April 7, Sir Edward Appleton described the results of an eleven-year series of ionospheric measurements just completed by Mr. R. Naismith and himself. The work began so far back as 1931, the critical frequency method of measuring the ionization density in the various atmospheric layers being employed (see NATURE, February 7, 1931). Measurements made by this method had not been in progress more than a couple of years before it was suspected that electron concentrations were varying in sympathy with solar activity. The need for continuing the observations for a complete sunspot cycle of just over eleven years was then realized and plans made accordingly. During the course of the cycle, other observers, in different parts of the world, have adopted the same method, and a world survey of the electrical state of the upper atmosphere by means of it is now in progress. The British observations have been made as part of the programme of the Radio Research Board of the Department of Scientific and Industrial Research.

The ionization in the E and F_1 layers has been found to increase by 50–60 per cent from sunspot minimum to sunspot maximum, indicating a corresponding increase of 120 per cent in solar ultra-violet light, which is known to be the ionizing agency in question. The ionization in the F_2 layer has varied even more markedly, especially in winter. Such a change has an important bearing on long-distance radio transmission, which proceeds by way of ionospheric reflexion. It is now clear that the range of short wave-lengths available for this purpose increases very substantially with solar activity. The