

bolism taken in the introductory historical sketch. Here Sir Herbert took the lightning flash and the thunderbolt as the first expression by early man in his 'rude art' of the symbolism of divine power. The gods depicted by man held the symbol of the thunderbolt first as a weapon, later as a baton or sceptre of authority. In that form, Sir Herbert pointed out, it is a widespread symbol in all primitive art. It occurs among Minoans, Greeks, Romans, the Hittites, in Mesopotamia, Central Asia, India and Mexico. The bolt was traced, with the addition of the wings of Jove, as it developed into the trident of Poseidon and Britannia and the lily of France. Two interesting examples of misinterpretation were quoted, which are not without a moral for those who practise interpretation of symbols: first, Napoleon mistook the *fleur-de-lys* of Clovis for bees and changed the *fleur-de-lys* in his own arms and those of Paris to representations of that insect; secondly, the Belgians took the flower on the French soldiers' uniform for representations of the frog and christened the French *crapauds* accordingly.

Sounding the Ionosphere

PROF. E. V. APPLETON showed in our columns in 1931 the importance of determining the variation, with frequency, of the equivalent path traversed by wireless signals returned from the ionosphere, since such determinations measure the maximum density of ionisation in the regions sounded. The letter from Mr. R. Naismith which we publish in our correspondence columns this week describes work which he carried out in May 1933. We understand that publication was deferred in accordance with an agreement between British and German workers that none of the results of radio work within the programme of the Second International Polar Year should be published until after the end of that year. The letter directs attention to the need for a rapid and more or less completely automatic method for recording the relation between the radio frequency of the pulse signals used and the equivalent path traversed by them in their double journey to and from the ionosphere, at nearly vertical incidence. At the time when the work described was carried out, there were available several methods for the continuous automatic recording of equivalent path against time of day, for a single frequency, but not for the more difficult problem of recording path against frequency.

THE radio staff at the U.S. Bureau of Standards has been working on the same problem, and at the annual convention of the Institute of Radio Engineers at Chicago on June 27, 1933, Mr. T. R. Gilliland (*Bur. Stds. Jour. Research*, Oct. 1933) described an automatic recording system giving records of the required type over the frequency range of 2500-4400 kc./s., the frequency being varied at the uniform rate of 200 kc./s. per minute so that the full range was covered in about ten minutes. The closeness of dates between the American and British work is illustrated by the fact that Mr. Gilliland showed a record for April 22, 1933, while Mr. Naismith

shows one for June 6 and informs us that his first record was taken on May 20. The means of investigation thus made available is clearly a very powerful one, and geophysicists will look forward to the results of the further developments promised from the Bureau of Standards and the National Physical Laboratory.

Yorkshire Scientific Magazines

THE publication of the December issue of the *Naturalist*, the monthly journal of the Yorkshire Naturalists' Union, completes a hundred years of the regular publication of this scientific magazine. The *Naturalist* originally appeared under the title of the *Field Naturalist* as an octavo monthly of 48 pages in January 1833, under the editorship of Mr. James Rennie. It ran for fourteen issues and then appeared under the title of the *Naturalist*, edited by Mr. Neville Wood, of Doncaster. In 1851 the second series of the *Naturalist* commenced under the editorship of Beverley R. Morris, and later the Rev. F. C. Morris, author of the well-known "History of British Birds"; the third series, edited by C. P. Hobkirk, appeared from Huddersfield in 1864. The fourth series of this magazine were edited by Joseph Wainwright and appeared from Huddersfield under the changed title of the *Yorkshire Naturalists' Recorder*, but the fifth series, in August 1865, reverted to the present title, the *Naturalist* (Sheppard, "Yorkshire's Contribution to Scientific Literature", *Naturalist*, 1915). The fifth series, edited by Messrs. C. P. Hobkirk and G. T. Pomitt, was issued at Pontefract, but later transferred to Leeds under the editorship of W. D. Roebuck and W. Eagle Clark, in 1884. In 1889, W. Eagle Clark, leaving for Edinburgh Museum, vacated his editorial post and Roebuck continued to be editor until 1912, assisted by E. R. Wade in 1892. In 1902 the *Naturalist* was issued from Hull under the editorship of T. Sheppard, assisted by Dr. T. W. Woodward. Mr. Sheppard relinquished the editorship in 1932. He was succeeded in 1933 by Dr. W. E. Pearsall and W. R. Grist as editors, when the *Naturalist* once more was issued from Leeds.

FEW counties have such an interesting record of scientific journalism as Yorkshire, and the *Naturalist* has watched many contemporary magazines rise and fall in its century. The *Bradford Scientific Journal* and the *Halifax Naturalist* were contemporary magazines. The *Circular* appeared as a scientific monthly in Halifax, 1866, while the *Practical Naturalist* commenced in Bradford in 1883 and was continued at Ilkely. The *Naturalists' World* was another of Ilkely's scientific monthlies and in 1879 the *Young Naturalist* appeared from Hartlepool and Huddersfield, becoming the *British Naturalist* in 1891, but ceasing issue in 1894. From 1882 until 1883, the *Naturalists' Monthly* was issued from Bradford and in 1892, the *Naturalists' Journal* commenced, later becoming *Nature Study* and being issued from Huddersfield, where it ceased publication in 1905. The *New Nature Study* commenced at Huddersfield in 1912 but was short lived. The Malton Field Naturalists' Society issued a monthly journal,