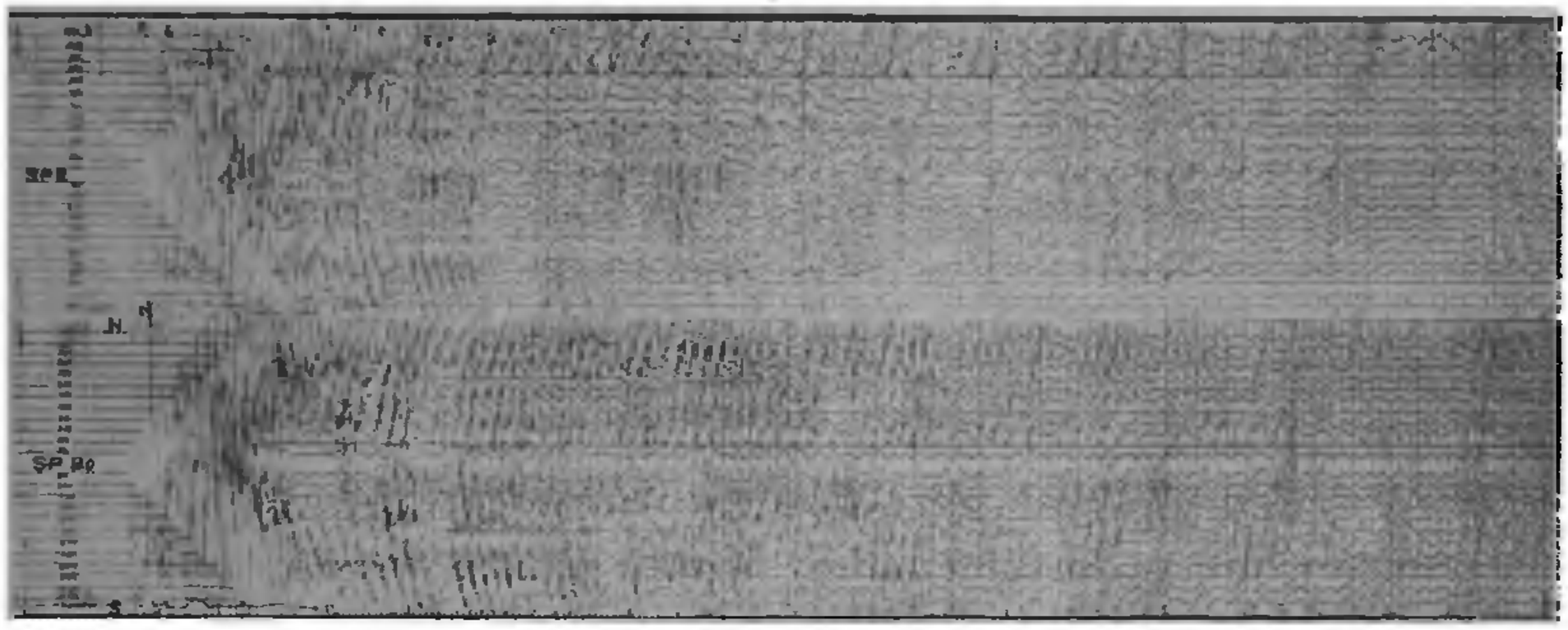

FIG. 3

The other prominent anomaly in the Mannargudi-Pattukkottai area trending in a north-south direction as indicated in the Bouguer gravity map is also worthy of further investigation by seismic shooting.

Thanks are due to R. Aravamudhan, P. C. Das, B. Subrahmanyam and others, who assisted the author in the seismic surveys and to Y. R. Bhanumurthy, B. G. K. Murthy, A. K. Menon and others, who carried out the gravity and magnetic observations and the reduction of the field data.

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A LARGE RED-SHIFT

ASTRONOMICAL data concerned with more distant galaxies are of greater significance to cosmological theories than those relating to our own galaxy and its neighbourhood, although the latter are necessarily much more accurate and detailed. The new science of Radioastronomy enables one to probe to greater depths in space, and the strongest radio sources have been identified with distant galaxies. This provides a promising way of locating such galaxies that show strong emission lines in their spectra. Emission lines permit very large red-shifts to be measured.

The recessional velocities of distant nebulæ, which are proportional to their distances, are determined by measurement of the Doppler-shift of the absorption lines in their spectra. However, the absorption features of faint nebulæ are veiled by the night-sky spectrum and Doppler-shift measurements of extragalactic nebulæ of apparent magnitude fainter than 19 are not ordinarily possible. Emission lines, however, remain visible for much fainter galaxies than absorption lines and can be used for their red-shift measurements.

Among the known radio sources discovered by radio-astronomy one has now been identified with a galaxy of apparent magnitude 21, which appears to be the brightest member of a cluster of galaxies. This shows a strong emission line at λ 5448 Å. The emission line is almost certainly the forbidden doublet of ionized oxygen, the laboratory wavelength of which is 3728 Å. Thus the large red-shift $\delta\lambda/\lambda$, corresponds to a velocity of 140000 km./sec. or 0·46 times the velocity of light (R. Minkowski, *Astrophys. J.*, 1960, **132**, 909). Baum using photoelectric photometry has found two fainter galaxies with Doppler-shift 0·44. Thus there is reason to believe that all the three galaxies are members of the same cluster.—(*Nature*, 1961, **189**, 713).