be expressed by the relations, where $A$ and $a$ are the amplitude and phase of the tidal induced effect:

$$V_1(t) = A \sin 2\pi(2t/T_L + a) + f(t) + D_1$$
$$V_2(t) = A \sin 2\pi[2(t + T_S)/T_L + a] + f(t + T_S) + D_2$$

The method of analysis therefore consisted in subtracting the values at the same hour from the records for two adjacent days.

Thus:

$$V_1 - V_2 = -2A \sin 2\pi T_S/T_L \cos 2\pi(2t/T_L + a + T_S/T_L) + D_1 - D_2$$

In averages of such differences taken over a number of lunar days the disturbances will tend to be eliminated.

Fig. 2 shows the measurements of earth currents made on the Suva–Auckland cable during May 16–19 and Fig. 3 on the Sydney–Auckland cable during May 16–19. The results plotted are the averages over each hour. The differences between the results for adjacent days are determined as described here and the average differences over the days are shown by full lines in Figs. 4 and 5 (Suva–Auckland and Sydney–Auckland cables respectively). To these curves is fitted a sinusoidal wave of period $T_L/2$, shown by dotted lines in Figs. 4 and 5. The amplitude of this wave is divided by $2 \sin 2\pi T_S/T_L$ to give $A$. Its phase enables $a$ to be found. Hence the currents due to the lunar oceanic tide can be compared with the observed readings. These are shown each day by the thin lines on Figs. 2 and 3. It is clear that, at least on magnetically quiet days, the main currents arise from the ocean tides.

It will be seen that the current induced directly by the quiet-day daily variation is less evident. As the tidal effects are exactly sinusoidal the mean potential differences for many days should be a good measure of the steady electric currents flowing. On the limited amount of material so far available it appears that they are no more than 0·1 mV/km.

The extension of these observations which will be shortly undertaken should provide an interesting study of the tides in the middle of the ocean. It will be seen from the figures that there is a phase relation between the Earth currents and the tidal heights. Were the tides standing waves, the velocities would be zero at high and low tides. But, as the latter occur when the potential differences are numerically greatest, the tides in this area are progressive waves. These not widely suspected motional induction effects in the oceans may make appreciable contribution to the geomagnetic variations observed on the continents.

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# NEWS and VIEWS

## Zoology at Queen's University, Belfast: Prof. R. A. R. Gresson

Prof. R. A. R. Gresson, who retires this year from the chair of zoology at Queen's University, Belfast, has held this post since 1949. Born in County Wicklow, he graduated at the University of Edinburgh, to which he returned in 1931 as lecturer in zoology under Prof. Ashworth. In 1941 he obtained the degree of D.Sc. for his research work on mammalian gametogenesis, and in 1946 was appointed to a senior lectureship in Edinburgh. A wide experience in cytology led to the publication of his *Essentials of General Cytology* (1948). Prof. Gresson is known not only for his work on the role of cytoplasmic organoids (especially the Golgi complex) in the development of germ-cells, but also for his many researches in the field of invertebrate cytology. Since taking up his post in Belfast, the numerous problems posed by helminth structure and function have claimed much of his attention. This interest led, in 1961, to a personal grant from the Wellcome Foundation for the establishment of an electron microscope unit within the Department of Zoology. Prof. Gresson's diplomatic and unobtrusive guidance, patent to all who have worked with him, has resulted in the harmonious expansion and diversification of the Department. Although himself concerned primarily with the ultimate structure of living matter, his horizons have not been correspondingly limited. His long-standing concern for the preservation of the Irish fauna has contributed significantly to a general awakening of interest in conservation in that country.

### Prof. G. Owen

Dr. G. Owen, who has been appointed to succeed Prof. Gresson, graduated with honours at University College, Cardiff, in 1950. He had previously spent five years in the Royal Air Force. He then proceeded to the University of Glasgow where, initially on a grant from the Development Commission, he worked with Prof. C. M. Yonge on functional morphology in the Bivalvia. A series of fundamentally important papers formed the thesis for which he received a D.Sc. from the University of Glasgow in 1959. He had meanwhile become a lecturer in zoology, and in 1956, with the award of a John Murray travelling studentship, spent six months in New Zealand, at Christchurch and at the Marine Station at Portobello, working on brachiopods and molluscs. More recently he has found additional interest in invertebrate connective tissue and has also successfully initiated a unit for electron microscopy. He has played a major part in teaching and in the direction of research at Glasgow and will bring academic distinction and high personal qualities to his new post.

## Biology at the University of Lancaster: Prof. C. D. Pigott

Dr. C. D. Pigott, who has been appointed professor of biology in the new University of Lancaster, is a Fellow of Emmanuel College, Cambridge, from which College he took Parts 1 and 2 of the Natural Sciences Tripos in 1948 and 1949. His capacity for ecological research was evident in his investigations of the taxonomy and ecology of the British species of *Thymus*, which constituted his work for the Ph.D. degree, much of which later appeared in scientific journals. In 1951 he joined Prof. A. R. Clapham in Sheffield and they were associated in building up an important school of research on the intimate relations between the plant and its environment. In particular, a study by Pigott of the autecology of Jacob's ladder, *Polemonium caeruleum*, shows this kind of research work