

Each of the fourteen chapters which follow is introduced by a section dealing with the fundamental aspects, which are linked up very usefully with technical matters and practical problems in the further sections. Technologists concerned with the fight against corrosion and all students of the subject will find this book invaluable.

H. SUTTON

*Evotomys glareolus*, than of the grass-eating, short-tailed, or meadow vole, *Microtus agrestis*.

A word of praise must be given to the excellent photographs—landscape, birds, insects and flowers—that illustrate this volume, the picture of that curious plant herb Paris and the study of white water lilies being particularly good.

FRANCES PITT

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## A NATURE DIARY

The Country Diary of a Cheshire Man

By A. W. Boyd. Pp. 320+15 plates. (London: Wm. Collins, Sons and Co., Ltd., 1946.) 12s. 6d. net.

A NATURE diary, even the baldest, is ever fascinating, not only to keep but also to read. It is undoubtedly the diary-like form of Gilbert White's letters that helps them to hold their place as the great classic of country and Nature writing. The present book inevitably draws upon itself comparison with that masterpiece, a comparison from which it emerges with all credit, for it is of the authentic Selborne school, detailing the daily happenings of the countryside with a gusto that communicates itself to the reader, touching on this item and that item with an enthusiasm and insight that brings illumination to the most everyday subject. Take, for example, the following remarks on the grey squirrel and the red squirrel: "One of the alien grey squirrels, now so securely established in England, was killed in Cheshire and given me a few days ago, and it is easy to see how the belief arose that it inter-breeds with our native red squirrel, although no authentic evidence whatever of hybridization between the two species has ever come to light. The one given to me was just changing its coat, and possibly that accentuated the redness of its fur in certain parts of the body; there was a russet streak along each flank and the same colour on the face, the hind legs, and to a less extent on the back."

We agree with the author regarding supposed hybrids between these two species, having so far failed to obtain any evidence of fraternization of these animals in a wild state.

Mr. Boyd's notes of his home county happenings are interspersed with short accounts of trips abroad in search of birds, such as a visit to Finland and another to Spain, and very interesting are his descriptions; yet not, in the reviewer's opinion, half so fascinating as his day-to-day reports of little homely things. He ranges over a wide field: birds may be his chief interest but he does not forget to mention that April 27, 1942, saw "green-veined white butterflies flying in the sunshine, and the beautiful pale lilac purple-streaked marsh violet has come into flower"; he adds, "although red champions were out eleven days ago, most of them still remain in bud".

Mr. Boyd makes an interesting observation with regard to birds on an experimental seed farm. "Gulls do harm in a remarkable way. They regurgitate some of the grain they have swallowed, and these pellets fall among the carefully numbered lines of wheat and oats and produce 'rogue' plants. The activities of the short-tailed field-mice have the same result, for they collect grain from several rows and heap it in the wrong place; one vole had carried 350 grains of rye and planted them thirty-five yards away."

It would be interesting to know if the culprits were identified for certain, as it sounds more like the work of that indefatigable little rodent the bank vole,

## GRAMME AND THE INVENTION OF THE DYNAMO

Zénobe Gramme

Notice bio-bibliographique suivie de la description de la dynamo par son inventeur et d'autres documents. Par Jean Pelseener. (Collection Nationale No. 6.) Deuxième édition. Pp. 80. (Bruxelles: J. Lebègue et Cie., 1944.) 15 francs.

THIS booklet falls into three main parts—a bibliographical note on Zénobe Gramme by the author, the reprint of four papers by Gramme, his only published work, and a bibliographical list concerning Gramme and his invention, three items of which are reprinted in full, being difficult to obtain in the original.

Zénobe Gramme was born in 1826, into a large family of a Belgian minor Civil Servant. His education was most elementary, as he had not shown much aptitude for routine school work. He was skilful with his hands from early childhood and took carpentry as his profession. Through a Belgian acquaintance he obtained a job as a model-maker to a firm of instrument manufacturers in Paris, where he became interested in electricity. Soon he had inventive ideas and began to construct in his home an electro-magnetic machine capable of delivering uni-directional currents and thus suitable for replacing galvanic batteries, the only commercial source of electric power at the time. He was granted a patent for his invention in 1867, and founded a company for its exploitation in 1870. A description of his machine was first given in the *Comptes Rendus* in 1871.

Gramme's career from a carpenter's apprentice to a very successful company director differs from the more common fate of many self-taught inventors. He showed remarkable intuitive skill in concept, design and construction of his machine. A new source of power was gained by the rapidly developing industrial society, of which it was in great need.

The author devotes much space to the discussion of the priority dispute between Gramme and Pacinotti (1841-1912). Pacinotti, a professor of the University of Pisa, built an experimental model of an electro-magnetic machine in 1860 and described it in detail in 1863 in an Italian journal. Pacinotti's machine shows several remarkably modern design features and is close to Gramme's in its main idea. But he was a little too early with his invention, so that he did not succeed in finding sufficient financial backing. Gramme's machine was conceived quite independently and at once proved commercially successful. M. Pelseener is inclined to give Gramme the olive branch for the invention, and uses arguments against Pacinotti which do not always carry conviction. It is interesting to note that Gramme did not take sides in the priority quarrel, which in the main raged after his death in France in 1901. Gramme's photograph is used as a frontispiece to the booklet, which is tidy if not very attractive in appearance.