

the direct method of expressing ventilating resistance—a method which he places to the credit of Cambessédès—and for his presentation of that side of the subject we have nothing but praise.

The reputation which Messrs. Arnold have gained as the producers of well-printed and capably edited scientific text-books is not likely to be diminished by this volume, the virtues of which considerably transcend the defects.

*Bibliographie de la relativité : suivie d'un appendice sur les déterminants à plus de deux dimensions, le calcul des variations, les séries trigonométriques et l'azéotropisme.* Par Maurice Lecat, avec la collaboration de Mme M. Lecat-Pierlot. Pp. xii+291+47. (Bruxelles: M. Lamertin, 1924.) 90 francs.

It is a striking instance of the acceleration of ideas in the modern world that a theory which five years ago was known only to a narrow circle of mathematicians engaged on an abstract and abstruse problem, and until then unverified, should have produced already a flood of literature. The mere catalogue of the books and articles written on the principle of relativity occupies 290 pages, and an appendix of more or less associated mathematical works, another 47. A whole century elapsed before the hypothesis of Copernicus became the universally accepted Copernican theory, and at least one generation passed before Newton's gravitation formula received general recognition. Of course in neither case was the proof so dramatic and the conviction so immediate and the interest so intense as in the eclipse expedition of 1919. The nearest analogy to that was Pascal's experiment with the barometer on the Puy de Dôme in 1648, which established the theory that the atmosphere has weight.

The author's incentive to compile this catalogue and the diligent application it required are set forth in a rather curious preface, in which the writer, a pacifist and cosmopolist, bemoans the militarism of his country and its government. The relevance is not quite clear. He tells us, however, the significant fact that numerous authors, almost all university professors, begged him with a touching insistence, that he would omit some of their writings, if not all, because they were completely false. To this request, however, he informs us he was inexorable. No doubt selection would be difficult and hazardous, but it seems hard that a writer should be held to the fatal  $\delta$  γέγραφα, γέγραφα.

*The Birds of Portugal.* By William C. Tait. Pp. xii+260+10 plates. (London: H. F. and G. Witherby, 1924.) 18s. net.

WHEN one thinks of the many ornithologists and bird-lovers in Great Britain, and of the numerous books on British birds, it is surprising to learn that Mr. W. C. Tait knows of only one native field ornithologist in Portugal, where he has himself for long been resident, and that the literature on Portuguese birds is exceedingly meagre. His own book on the subject fills a gap in a useful way. It is almost entirely devoted to a systematic account of the status in Portugal of each species, no attempt at descriptions of birds being made. An introductory chapter describes the physical characteristics of the country. A second general chapter deals with migration, giving a somewhat disjointed

but nevertheless interesting account of its Portuguese aspects. Many species which are native to Northern Europe are only winter or passage visitors to Portugal, and that country is perhaps interesting to us, ornithologically, chiefly by reason of its place in the migratory path of our own summer birds. In an appendix, Mr. Tait gives a list of all the marked birds which he knows to have been recovered in Portugal, although we notice that this is not quite so complete as it could have been made from published sources; nearly thirty species are represented in the list, in which birds marked in the British Isles and in Holland bulk most largely (little marking is done in France), although there are also birds from Germany, Denmark, Sweden, Czechoslovakia, and Switzerland.

*Developments in Power Station Design.* By E. Austin. (The Engineer Series.) Pp. xv+271. (London: Constable and Co., Ltd., 1923.) 31s. 6d. net.

THIS book will be found useful and interesting by every one connected with the design of electrical power-houses or associated with the installation and operation of steam and electrical plant. The author looks forward to the time when every factory will be driven electrically and power production will be confined to very large power stations. Before this happens, however, it is essential that every manufacturer who generates power for his private use should cut down his consumption of fuel to a minimum. This is highly desirable, not only to reduce his working expenses but also to prevent waste of the nation's coal resources.

There are excellent chapters on pulverised coal-plant, low temperature carbonisation, and waste heat. The boiler-house plant is discussed very thoroughly, but we should have liked a more thorough discussion of the electrical side of power generation. It is a pity that up to the present time very little progress has been made with the huge scheme outlined by the Coal Conservation Sub-Committee in 1918. This is partly due to the lack of interest in the subject by the nation.

*Cobalt Ores.* By Edward Halse. (Imperial Institute: Monographs on Mineral Resources, with special reference to the British Empire.) Pp. 1x+54. (London: John Murray, 1924.) 3s. 6d. net.

THIS small work forms one of the series of Imperial Institute Monographs and follows the familiar arrangements of its predecessors, commencing with a description of the occurrences of cobalt ores and the uses to which the metal is applied, this being followed by a chapter on the sources of supply of cobalt ores within the British Empire and in foreign countries. As usual, a useful bibliography completes the volume. The work has been quite satisfactorily done, though it must be admitted that the task in this case was a tolerably easy one, as a good deal of the matter was ready to hand. The Canadian Department of Mines has published a good deal of information about cobalt, particularly the researches on the metal and its alloys by Dr. H. T. Kalmus. Naturally the statistical and other material collected by the Imperial Mineral Resources Bureau has been made use of. The little work can be recommended to any one who desires a concise review of the occurrences and distribution of the ores of cobalt.