character. The author must not think, therefore, that we speak unfavourably of his work because of its novelty. The true explanation of physical phenomena will sound exceedingly novel, we have no doubt, when it is first put forward. It may be that in the author's mind there is a germ of an idea which deserves developing. But if he wishes this to be recognised it would be well if he were to get some friend to assist him in the process.

The main aim of the book is to reduce all "forces" to one origin; and the secret by which it is done is the recognition of the "polarity of matter." Considering the thoroughgoing attempts of Sutherland and others to explain gravitation by means of polar systems of electrons, he would be a rash man who should say that the author's idea is absolutely chimerical. Whether or not he is qualified to develop it may perhaps be learned from the following extracts:—

"When the magnet is a straight bar . . . the distance between its pole being $2a$ . . . the magnetic force is 3·14 times the gravitational force. If the magnet be bent into the form of a horse-shoe so that the distance between its poles is a, the magnetic force is 12·5 times the gravitational force. . . When the poles of the magnet come together the force is unity. . . ."

"The position of a fragment of iron in a magnetic field may therefore be defined as tangential to an ellipse of which the magnetic poles are the foci."

"The force of attractive interest in each of two bodies forming the poles of an electric force is a constant quantity, and when the force radiates equally in all directions its magnitude is gravity."

"In all cases of magnetisation by means of an electric current, certain waves proceed from the current by which the effect is produced. These waves are commonly called Hertzian waves."

If the seeker after novelty finds in the above extracts the particular kind of novelty for which he seeks, we cordially commend the book to him; and we wish him greater success in unravelling its meaning than we have attained.

Wild Bees, Wasps and Ants, and other Stinging Insects. By Edward Saunders, F.R.S. With numerous illustrations in the text and four coloured plates by Constance A. Saunders. Pp. xiii + 144. (London: Routledge and Sons, Ltd., n.d.) Price 3*s.* 6*d.*

SINCE the death of Frederick Smith, probably no man has given more attention to the study of our British Hymenoptera Aculeata (the section of the order which contains stinging insects, such as bees, wasps, and ants, &c.) than Mr. E. Saunders. This order of insects is much less hackneyed than the Lepidoptera or Coleoptera, and Mr. Saunders's work will be very useful to beginners commencing the study of perhaps the largest order of insects of all, and also of the most interesting section, for there are only four groups of insects known which include species living in organised communities, three in Hymenoptera—bees, wasps, and ants—and only one in Neuroptera—the termites, improperly called white ants. The non-aculeate Hymenoptera, not here dealt with, are far more numerous, and are very imperfectly known or studied at present; they comprise the sawflies and gall flies, and also the ichneumons, and other parasitic insects, hundreds of which are of very small size, including among them the smallest known insects.

But it will be sufficient for most entomologists who are inclined to study Hymenoptera to follow the lines laid down by Mr. Saunders for the examination of the structure and habits of the more familiar and less difficult group of Hymenoptera Aculeata. The information given, though, of course, much condensed, is well arranged and thoroughly trustworthy, besides being expressed in an attractive manner. The last chapter, "On Structure," with a good diagram and clear descriptions, will be particularly useful, for nothing is more troublesome to an entomologist taking up the study of an order or group of insects unfamiliar to him than the absence of a clear explanation of the terms applied to the various details of insect structure.

Das Problem der Schwingungserzeugung. By Dr. H. Barkhausen. Pp. iv + 113. (Leipzig: S. Hirzel, 1907.) Price 4 marks.

THE author of this book discusses the conditions under which an instrument or piece of apparatus can produce undamped vibrations when the source of energy does not vary periodically.

The organ pipe and violin string illustrate the phenomenon in the case of vibrations produced by mechanical means. For the mathematical theory, however, electrical vibrations are the most convenient, and as the problem of creating undamped electrical vibrations is of present-day importance in wireless telegraphy, the greater part of the book is devoted to its consideration.

The first result obtained is that a necessary condition for the production of permanent vibrations is the presence of a variable alternating resistance, self-induction or capacity in the current system. The variation of the resistance may be due to external action, as in the microphone and in a new arrangement called the resonance interruptor, which is capable of giving high frequencies, or it may arise from the current flowing through the apparatus as in the electric arc.

The author makes frequent use of graphical methods, especially in the discussion of three different types of vibration which can be produced with the arc. These are investigated separately, and compared with regard to their capacities for resonance, high frequency, and performance of work. The questions of stability show that permanent vibrations can be obtained only when the interval for re-kindling after extinction increases more rapidly at first than it does afterwards. Various methods are given by which this can be ensured.

The book concludes with a chapter on mechanical vibrations, particular attention being paid to those produced by friction. On the whole, the exposition is good, and we can confidently recommend the book to those who wish to obtain a grasp of the principles of the subject. H. B.

Album de Aves Amazonicas. By Dr. E. A. Goeldi. (Para: Museu Goeldi, 1907.)

WE have been favoured with a copy of the third and final fasciculus of this superbly illustrated work, of which the first part was noticed in our issue of August 22, 1901. The present fasciculus includes plates 25–48, which are executed in the same first-class style as their predecessors, and a re-issue of the descriptions of the entire series, together with several well-arranged indices. We can add little in the way of commendation to what has been already written in our notices of the two earlier issues. Throughout the work the figures are for the most part well drawn, and coloured with such a near approximation to nature as to render the various species easily recognisable. That the work will tend to promote the study of Brazilian ornithology cannot be doubted, and the author is to be heartily congratulated on having given to the world such a splendid series of portraits of the most striking representatives of a tropical bird-fauna.