

INDUCTION COIL- THEORY AND APPLICATIONS by E. TAYLOR JONES. Originally published in 1932. PREFACE: THE theory of the action of an induction coil, or that of any other form of oscillation transformer, is essentially a theory of the transient electric currents set flowing at some sudden or very rapid change in the circumstances of one of a pair of coupled circuits. The precise manner of variation of the currents depends upon the method by which they are started, but generally in inductive circuits it takes the form of two superposed oscillations which gradually die away while the system is adjusting itself to its new conditions. In many cases the currents, besides varying with time, are also variable along the wire owing to its distributed capacity a fact which is too often overlooked, with the consequence that erroneous statements are sometimes made regarding fundamental matters, such as, for example, the law of electromagnetic induction which is discussed in Chapter I. The book contains a less detailed and more descriptive account of the action of induction coils than that given in the Theory of the Induction Coil published eleven years ago. All the essential features of the theory are, however, retained in the present account, and free use has been made of portions of the earlier book where they appeared suitable for the purposes of the present one. As in the former book, oscillographic records are used largely to illustrate the subject, and many new examples are here collected, including some, in Chapter III, which illustrate the relative merits of coils and transformers as generators of high potentials. In using an induction coil or other generator for some practical purpose, it is important to understand the nature of the function which it has to perform. One such duty, for which induction coils are in general use at the present time, is that of producing ignition in motor-car engines, and an account of this subject is accordingly given in Chapter VIII, with a discussion of the relative effectiveness in ignition of different types of induction coil spark. The induction coil has recently proved to be a very suitable generator of cathode ray beams for the study of electron diffraction phenomena, and a description of experiments by this method is given in Chapter VI. At the present time much use is made of the sustained oscillations of coupled circuits, especially those in which the amplitude is kept constant by the action of a triode valve. There is an important difference between such maintained oscillations and the transient vibrations which follow a sudden alteration of the circuit conditions. In the latter, both component vibrations are usually strongly in evidence together, but in the oscillations maintained by a valve only one of the components is usually present, and it is only in very special circumstances that both oscillations can be maintained simultaneously. This question is discussed in Chapter IX, in which the conditions for the maintenance of one component, or the other, or of both together, are explained. The author wishes to thank the Editors of the Philosophical Magazine, The Electrician, and the Journal of the Rontgen Society, for their kind permission to use articles and illustrations which have been published in those journals. Much of the experimental work described in the following pages was carried out in the Physics Laboratory of the University College of North Wales, Bangor, and in the Natural Philosophy Department of the University of Glasgow...

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An induction coil or spark coil is a type of electrical transformer used to produce high-voltage. One of the largest coils ever constructed, built in by Alfred Apps for William Spottiswoode.

Wound Michael Faraday discovered the principle of induction, Faraday's induction law, in and did the first experiments withÂ Construction and function - Mercury and electrolytic - History. Many of the earliest books, particularly those dating back to the s and before , are now extremely scarce and increasingly expensive. We are republishing.

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processes. Knowledge of these basic theories of induction heating helps to understand the application of induction heating as applied to induction heat treating. An AC (alternating current) generator utilizes Faraday's law of induction, spinning a coil at a constant rate in a magnetic field to induce an.

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