HOW TO MAKE INVENTIONS: OR, INVENTING AS A SCIENCE AND AN ART. A PRACTICAL GUIDE FOR INVENTORS

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How to Make Inventions: Or, Inventing as a Science and an Art. A practical Guide for Inventors by Edward P. Thompson & William A. Courtland

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EDWARD P. THOMPSON & WILLIAM A. COURTLAND

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HOW TO MAKE INVENTIONS;

OR,

INVENTING AS A SCIENCE AND AN ART.

A PRACTICAL GUIDE FOR INVENTORS.

BY

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TO THE

UNITED STATES PATENT OFFICE,

THIS

EDITION IS DEDICATED.

CONTENTS.

ERRATA.

On page 7, line 9 from bottom, change "Army" to "Navy."

On page 14, line 6 from top, change "more" to "less."

On page 17, line 9 from bottom, change "is" to "are."

On page 89, line 16 from top, change "mometarily" to "momentarily.

On pages 71 to 86, heat is necessary to produce nearly all reactions instead of only a few.

PREFACE.

IN early days, inventive power was attributed to the devil; later, to the direct intervention of divine power; later, to a special gift, whose source is not definitely asserted, and at present, according to indications, to means forming the subject matter of this treatise. "Heaven helps those who help themselves." The object of this book is to establish inventing as a science, and to treat it as a mental art or profession. Since the appearance of the first edition, no claimant has alleged priority in this field, while reviewers have alluded prominently to the novelty of the work. The author believes that the sooner inventing is recognized as a science and an art, and as due to a power which can be cultivated and enlarged, the following benefits will eventually ensue:—(1). A higher type of inventor. (2). Establishments or professional offices where manufacturers and the public may apply for the solution of inventive problems. (3). More rapid progress, so that the results now imagined for the twenty-first century may be expected in the twentieth. (4). More literature on the subject of invention as a basis for the growth of the science. Valuable literary contributions, consisting of favorable opinions. More facts and principles now hidden and a more complete and comprehensive formulation of laws relating to the inventive power. (5). The establishment of greater confidence in one's power of inventing which in itself is one of the best stimulants. (6). The eradication of future duplicate inventions. If inventors study the science of invention as they do other sciences, they are better informed. They know more of what they ought to know. They are less likely to re-invent what has already been invented. (7). Less "cranks" and more genuine inventors. (8). Better treatment of poor inventors.

The first edition was favorably received by the higher class of critics, but the less competent, and I am glad to say only one opposed the idea of science, or system or method of inventing. To that editor, who I learn is in the habit of agreeing with everything long established, and scouting everything new, and to all others who are inclined to be dubious on this point, I answer upon the authority of Bacon, and by a quotation from his Novum Oganon, section 108, Book the First: "If men who were not seeking for them, but were engaged in something else, have nevertheless found out many useful discoveries, by some chance or circumstance; no one can doubt that men if they did seek for them, and engage themselves upon them, and that too, methodically and orderly, not by fits and starts, and desultorily, would necessarily discover far more things. For though it may happen once and again that any one has hit upon that by chance, which hitherto had escaped him, though he sought it with great effort and diligence, yet generally the contrary is doubtless the case. And so, far more and better things, and at less intervals, are to be hoped from man's reason and industry direct method and

application, than from chance and animal instinct, and the like, which up to this time have originated discoveries." By "discovery," Bacon includes industrial invention for, in the next paragraphs, he refers to the common silk thread, the sewing needle, and the art of printing. In a similar manner Bacon had "hope" that Chemistry, Physics, Geology, etc., would become matters of system and method, and therefore would advance with greater rapidity. Every one knows the result. How like a prophet! He had a hope, as he says, founded on reason and facts. That hope is now realized, as to the physical sciences. How soon will the hope as to the recognition and establishment of systematic, logical and scientific inventing be realized by man! As stated in the first edition, the author's object is to make a mere beginning in the establishment of inventing as a science. This second edition is a continuation of the effort by the addition of new principles, facts, theories, laws, opinions, experience and revision of similar existing elements of the first edition.

By study of Chemistry, many become chemists; of Botany, botanists; and so on, and by study of the science of Invention, it is reasonable to conjecture that many may be better prepared to make inventions; hence the leading title of this book, which is primarily intended for those who are desirous of becoming systematic inventors and of knowing all that inventors should know; and for scientists and curiosity readers secondarily. If the leading title were "The Science of Invention," the latter class of men would be attracted to the book more than the former which is not so desirable, because the former by their inventions can be of more service to mankind.

The general style adopted in this book is that of a lecture, and therefore, it is hoped that the use of personal pronouns may be overlooked.

The author's earlier contributions on the same general subject are articles in the *Electrical World* during or about 1884, and a paper before the New York Electrical Society, delivered in the hall of the American Society of Mechanical Engineers and American Institute of Electrical Engineers in 1890, and printed in the *Electrical Engineer*, in extracts, and in the *Commercial Advertiser*, New York.

The first one hundred and twenty pages were printed from plates made for the first edition. This will explain to those acquainted with the art of printing, why new cuts and revisions are found in subsequent pages only.

The principles in physical science set forth in certain chapters are good for years, as only facts or principles (*i. e.*, truth) and not theories or crude apparatus, are presented. Example. "Variation of pressure of carbon contacts vary an electric current," is a truth settled probably for ages; but the chapter on "The Government Favorable to Inventors," and especially that part relating to foreign patent protection is liable to change, and therefore it is asked that future readers take into account the date of publication. As to the chapter on "Failure and Success," the profits quoted are probably much exaggerated in individual cases; but they may safely be taken as an illustration that *quicker* fortunes are made through inventions either by inventors or promotors of inventions than by any other class. It is argued often that there is more failure than success in connection with inventions. This is also true as regards any business. Greatly over one-half of business enterprises fail; but how foolish it would be to become discouraged and inactive in business on this account.

Emerson says that a sensible man makes no apology. No apology is made for the advertisements in this book. Where would *Harper's Magazine* and other valuable literature be, but for advertisers.

5 Beekman St., N. Y. E. P. T.