

**THE EVOLUTION OF
AUTOMATIC MACHINERY:
AS APPLIED TO THE
MANUFACTURE OF WATCHES**

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The Evolution of Automatic Machinery: As Applied to the Manufacture of Watches by E. A. Marsh

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E. A. MARSH

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D. H. CHURCH

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THE EVOLUTION
OF
AUTOMATIC MACHINERY

AS APPLIED TO

THE MANUFACTURE OF WATCHES

AT WALTHAM, MASS., BY

THE AMERICAN WALTHAM WATCH COMPANY

BY E. A. MARSH

WITH HALF-TONE ILLUSTRATIONS.

CHICAGO :
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PREFACE.

An apology, to possess its highest value to all parties concerned, ought to be both prompt and unsolicited. The writer of the following pages desires, therefore, to apologize in advance for the short-comings and imperfections which may be found in this brief review of some of the steps of mechanical progress in the manufacture of watches on the American System. The work of preparing this brief history was performed in connection with the every-day factory duties of the writer and, therefore, subject to frequent interruptions and delays. It was not expected that it would be embodied in any more permanent form than in the columns of the monthly trade journal for which it was written.

E. A. MARSH.

Waltham, Mass., February, 1900.

INTRODUCTION.

As mankind develop in intelligence and culture, their wants become more numerous and varied and their requirements more exacting. The supply of one want but briefly anticipates the creation of a new one, which in turn demands satisfaction, so that the great and growing business of the world seems to be to supply its various wants. To a certain extent this supply business possesses the nature of a barter, in that it is an exchange of commodities, not always a direct exchange, indeed, it seldom is so simple a matter as that, yet in an indirect way all business as such is simply a channel through which the multitudinous wants of mankind find their supply. As the great majority of people have certain wants in common, the matter of providing an adequate supply becomes very important, and calls for special means or agencies through which to work, so that it follows that the better the means of supply the cheaper can be the supply obtained and the want satisfied. So that it is by no means an indication of laziness or indolence in an individual if he uses his brains in devising an easier, or

quicker, or cheaper, or better method of performing his work. On the contrary, it will in many or in most cases prove quite the contrary fact.

It is one of the inherent conditions of human nature, especially of physical nature, that it is susceptible to fatigue. It is also a fact that a condition of weariness is not conducive to the attainment of the highest results, either in quantity or quality of work produced. If one of the qualities demanded in any certain kind of work be the highest attainable degree of uniformity, it will be readily admitted that the individual workmen, with the certainty of constantly recurring periods of fatigue, which make imperative corresponding periods of rest, is at a great disadvantage when in competition with an impersonal and tireless machine which is capable of producing work of a like kind. The man gets tired, or nervous, or is not feeling well, or is inattentive, or careless and indifferent. The machine has no such weaknesses, and though its work is not held up to the standard quality by any domination of its own conscience, yet its mechanical functions are so invariably exercised that its product of work will surpass that of its human competitor, not alone in quantity, but in exact uniformity as well. How much better then is a man than a machine? Within certain limits the machine is the