

dependent on temperature, and requires three weeks or upwards in our climate. Months of warm weather are therefore required to produce any multitude of flies from the few surviving in the winter. Why the epidemic should exhibit this dependence is not explained, unless on the assumption that the fly population determines the number of cases of diarrhoea.

Without losing sight of the various other ways in which the specific infective agents of cholera, typhoid, epidemic diarrhoea, and dysenteries may be and are transported from the excreta of one individual to the mouths of others, the *prima facie* case against the house-fly is complete.

Further, in the case of infantile diarrhoea, the fly-carriage hypothesis offers a satisfactory interpretation of the extraordinary dependence of the epidemic upon the accumulated effect of temperature, and affords a ready explanation of the spread of the infection of cholera, typhoid, and diarrhoea to neighbouring persons who have no contact with the patient, in those cases in which contamination of a water or food supply may be excluded.

The direct proof of the extent of the danger due to flies is lacking, but the hypothesis has pragmatic value. It not only interprets facts otherwise awkwardly explained, but measures based upon it have been attended with beneficial results; in other words, it works.

#### THE RESURRECTION OF BABYLON.<sup>1</sup>

THOUGH scarcely a book to attract the general reader, Dr. Koldewey's account of the German excavations on the mounds which have for ages entombed the remains of Babylon the Great, is a work of considerable importance for all who are interested in the archaeology of the Old Testament. This, as perhaps is not generally known in England, is still a growing science; and the worst thing that can be said of the German Expedition to Babylonia is that, after so many years of patient and persistent spade-work on one of the most promising sites in the world, it has not yet succeeded in unearthing anything of higher historical or religious value than is recorded in the volume before us. Nothing extraordinary has hitherto been found; no great literary monument, no document of supreme religious moment, nothing that lends decisive help towards the settlement of any one of the unsolved problems of history or chronology. How much more fortunate in this respect were the pioneering labours of Layard and George Smith and Botta at Nineveh, of Rassam at Sippara, of De Sarzec at Tellô, of De Morgan and Scheil at Susa!

It is well for us that the Assyrian kings were so deeply interested in the literary monuments of Babylon. Had we depended for our knowledge of these on the remains of the Great City itself, we should (until the recent American discoveries at Nippur) have been left without any indication

of the existence of the Babylonian legends of Creation and the Deluge; to say nothing of the many relics of the arts and sciences of Babylon which the library of Assurbanipal preserved for us.

The pathos of the position of the German explorers was that the site had been looted so often previously to their systematic investigations that scarcely anything of first-rate importance was left for the latest adventurers. The temples and palaces of Nebuchadrezzar's capital were probably swept bare of most of their portable treasures at a comparatively early period; and the ravages of people in search of building material, and the petty pilferings of Arabs and other stray visitors, had doubtless robbed the ruins of much that would have been priceless in the eyes of modern explorers. Even the beautiful enamelled bricks,

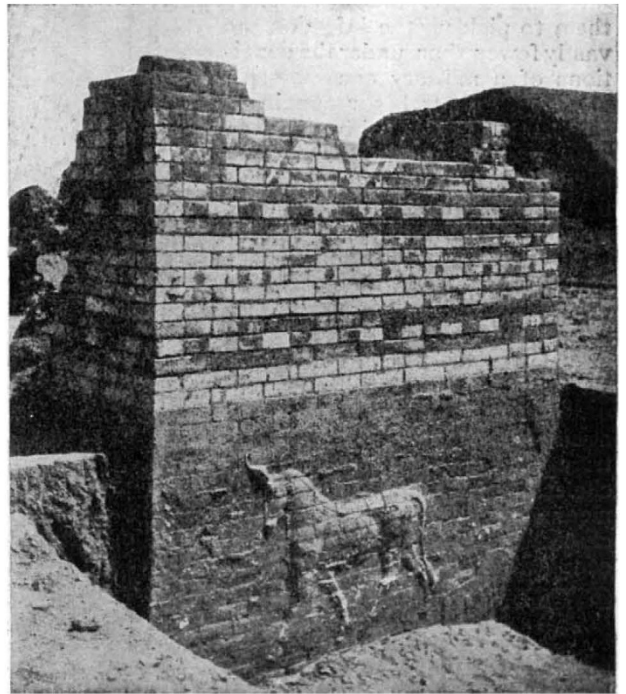


FIG. 1.—Enamelled wall length of the Ishtar Gate. From "The Excavations at Babylon."

with their strange mythological figures, are not altogether a novelty. Older specimens of the same kind of mural decoration were long ago reproduced by Perrot and Chipiez from Sargon's palace at Khorsabad ("History of Art in Chaldea and Assyria," II., plate xv.; see also plates xiii-xiv. Eng. Trans., London, 1884). But it is highly satisfactory to find such splendid examples as those of the Ishtar Gate still existing, *in situ*, and in such an excellent state of preservation (Fig. 1).

Whether anything of supreme value awaits disinterment at lower levels remains to be seen. Slabs of diorite or other hard stone, like the famous stela of Hammurabi, or the similarly written inscription of Nebuchadrezzar, which is (or was) one of the treasures of the library of the

<sup>1</sup> "The Excavations at Babylon." By R. Koldewey. Translated by Agnes S. Johns. Pp. xix+335. (London: Macmillan and Co., Ltd., 1914.) Price 21s. net.

East India House, might well have survived an age-long immersion in Euphratean mud. In any case, disappointing as, in such respects, results have hitherto proved to be, we entirely agree with Dr. Koldewey that it is most desirable that the work of excavating this historic site, begun so many years ago, should be carried to completion. Meanwhile, the special student will not fail to find many good things in this storehouse of facts and comments. It is now certain that ancient accounts greatly exaggerated the extent of ground actually covered by the city, the influence of which dominated the civilised world from the age of Hammurabi, the founder of its imperial greatness, to that of Nebuchadrezzar, who, if he did not find it of brick and leave it of marble, undoubtedly

either he or his translator has misunderstood Winckler (KB., iii., 2, p. 23), who explains *IV M amat gagari*, "4000 cubits of ground," as referring to the length of the new wall, not to the distance from Imgur-Bel, and renders *itâti Bâbili nisis lâ dahê*, "an den Seiten von Babylon, in der Ferne, sodass sie nicht herankam," where "sie" also refers to the new wall.

We must also be excused if we demur to the transcription "Sirrush" and the explanation "a walking serpent" (p. 46). The çirrush, or rather, mush-rush, was one of the aqueous monsters created by Tiâmat, to help her in warring down the gods of light. It is something to learn what a MUSH-RUSH was like; and Dr. Koldewey has enabled us to identify it with a form already

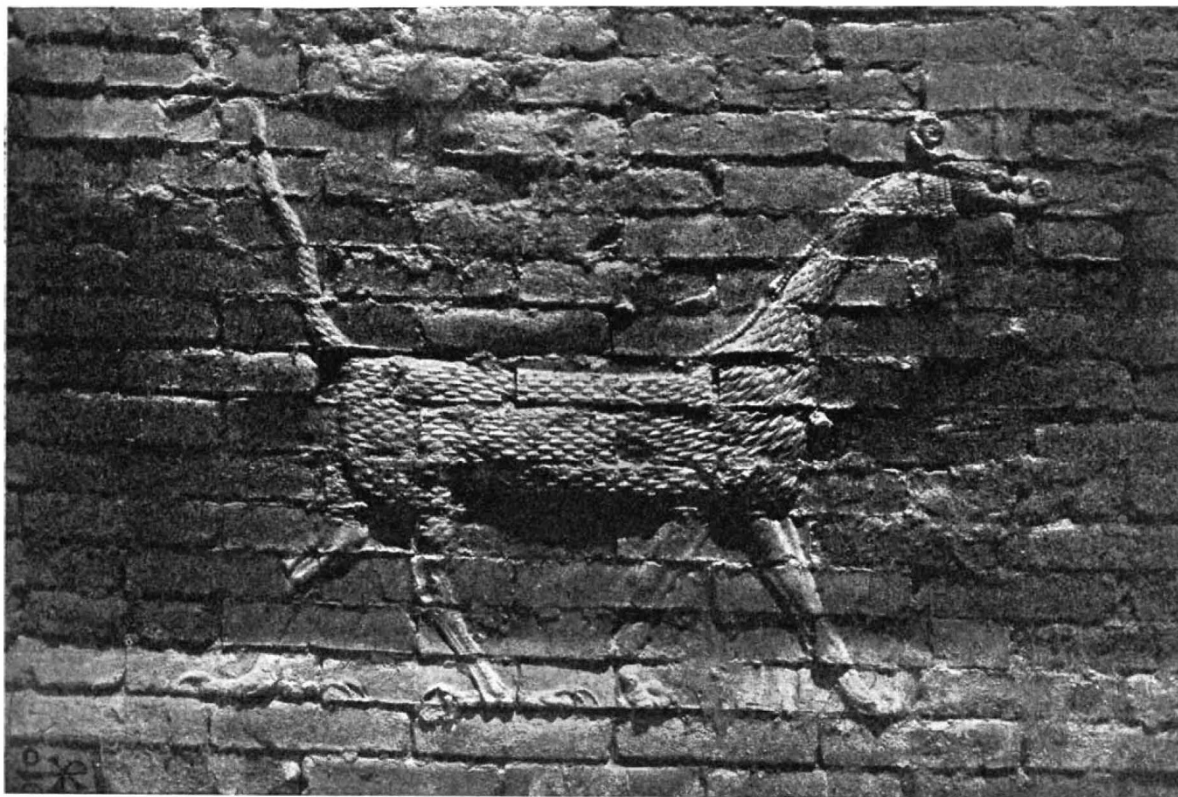


FIG. 2. — A Sirrush. From "The Excavations at Babylon."

restored and enlarged, its walls and temples and palaces on so grand a scale that the glories of Babylon the Great became a standing wonder of antiquity. The walls, however, have been found to range from upwards of fifty to more than sixty feet in thickness, and the mounds which concealed them rose to about four times the height of the ordinary *Tels* of buried Oriental cities: circumstances which sufficiently indicate the arduous nature of the task of excavation.

Dr. Koldewey's translations are, for the most part, good and accurate; but in EIH. VI. (not "7") 22-55, the passage in which Nebuchadrezzar or his court historian describes the building of the new eastern wall and the making of the moat,

familiar to us from other Babylonian monuments. It was, in fact, not so much a serpent (though the Sumerian MUSH includes that meaning) as a composite form with serpent head, scales, and tail, and four claw-footed legs—a sort of "laidly worm" or "fearsome dragon," and remarkably like a dinosaur. The name may denote *fierce* (or *glittering*) *dragon* (Fig. 2).

Dr. Koldewey first visited Babylon in June, 1887, about the time when the present reviewer was working upon the text of the East India House inscription of Nebuchadrezzar (see Proceedings of the Society of Biblical Archaeology, December, 1887). What a godsend would the present volume have been in those days, clearing

up as it does by its thorough investigation of local conditions and the actual remains of the ancient buildings so many of the earlier translators' almost hopeless perplexities! One after another, the Procession Street of Merodach, the Sacred Way along which marched the annual solemnity of Babylon's tutelary god; E-MAGH, the temple of NIN-MAGH, "The Exalted Lady," several inscribed cylinders from which may be seen in the British Museum collection; the Gate of Nanâ-Ishtar, with its superb enamelled figures; the palace of Nabopolassar (Nabû-apla-uçur), which Nebuchadrezzar restored with great splendour; the location of E-SAG-ILA, the temple of Merodach, and chief sanctuary of Babylon; the world-famed walls, and various connected structures, were determined and in part exposed to view.

All this, though perhaps not exactly the kind of matter to stimulate the enthusiasm of one who reads merely to while away an idle hour, constitutes a highly important contribution towards an exact topography of Babylon, and to the right understanding of the inscriptions of the Neo-Babylonian period; while it enables classical students to bring to the test of ascertained facts the descriptions of Babylon which we find in Herodotus and subsequent Greek and Latin authors, extracts from whose pages are given in Koldewey's convenient appendix. It is to be hoped that current events in the East may prove no bar to the further prosecution of Dr. Koldewey's meritorious and, indeed, necessary enterprise—even if it happen by the fortune of war that the whole or part of the treasures recovered by his continued labours should find their way to London instead of Berlin.

It should be added that the author has been fortunate in his translator, the English of the book being generally accurate and readable—which is not always the case with translations from German originals.

C. J. BALL.

#### SCIENCE AND INVENTION.<sup>1</sup>

(1) MR. EDELMAN'S book commences with descriptions of a number of scientific experiments, illustrated by small but clear diagrams. Some of these experiments will be familiar to all those who have taken an experimental course in chemistry and physics, but freshness is given by including simple instances of technical applications of scientific principles.

<sup>1</sup> (1) "Experiments. A Volume for All who are Interested in Progress." By P. E. Edelman. Pp. 256. (Minneapolis, U.S.A.: Philip E. Edelman, 1914.) Price 1.50 dollars.

(2) "Discoveries and Inventions of the Twentieth Century." By E. Cressy. Pp. xvi+398. (London: G. Routledge and Sons, Ltd., 1914.) Price 7s. 6d. net.

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Thus, sections are devoted to "thermit," the electrolytic cleaning of tarnished silver by contact with aluminium in a solution of soda and salt, the preparation of colloidal solutions of platinum and gold, etc. The following description of a method of soldering aluminium may prove useful (p. 47):—

Aluminium, 1 part; zinc, 4 parts. After the aluminium has been melted add the zinc, then a small quantity of fat. The mixture should be well stirred, after which it may be poured into stick moulds.

To apply, scrape the article bright at place to be soldered. Use a little Venetian turpentine as a soldering fluid. A thin shaving of the solder may then be placed around the joint and melted with a blow torch.

It is impossible to mention the very large number of technical and scientific principles which are described and illustrated; it must suffice to say that these range from the production of Pharaoh's serpents, through electric motors and

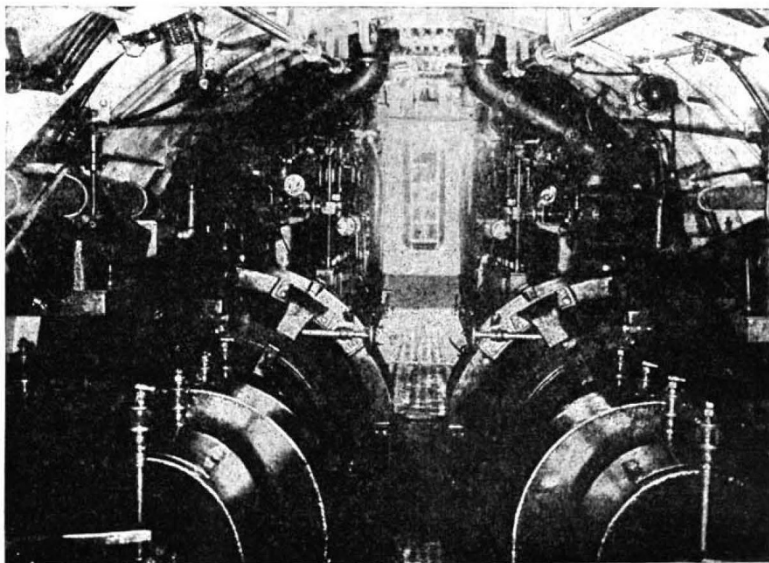


FIG. 1.—Engine room of submarine looking forward. From "Discoveries and Inventions of the Twentieth Century."

dynamos, to wireless telegraphy and X-rays. The last nine chapters are devoted to an analysis of the principles used in research and invention. The book is well got up, and forms interesting and instructive reading.

(2) Although the twentieth century is still young, Mr. Cressy has found nearly four hundred pages to be none too many in which to describe the progress of inventions made therein. The remarkable improvements which have been made in the details of most industries are clearly brought before the reader. The modern applications of water power, as exhibited in the water turbine and the Pelton wheel; the developments of the steam turbine; the Humphrey pump; improvements in gas, petrol, and oil engines, including the Diesel marine engine, and the "Gnome" engine for aeroplanes; these form a few of the developments described in the first few chapters. Electric lighting is next discussed, and some in-