

The Half-crown Atlas of Physical Geography. By Keith Johnston, jun. 31 maps, printed in colours. Small 8vo. (Edinburgh, Johnston.)

THIS atlas astonishes and delights us. For two shillings and sixpence we at last get beautifully finished maps, showing the land and water hemispheres, and the lands which are blessed with an antipodes; a perspective view of the globe; physical maps of the continents, Australasia, British Isles, and the Holy Land, a geological map of the British Isles, maps of ocean and river systems, ocean basins, winds and storms, annual isothermal lines, and range of temperature, distribution of earthquakes and volcanoes; the geographical distribution of useful plants and species, the chief animals, and varieties of man himself. There are, moreover, notes as to the preparation of the atlas, and an analytical index. We warmly congratulate Messrs. Johnstons on their last achievement, and advise everybody to buy the atlas.

Cassell's Technical Manuals.—1. Linear Drawing. 2. Projection. 3. Building Construction. By Ellis A. Davidson. Price 2s. each. (London: Cassell, Petter, & Galpin.)

THESE little books are intended to promote the technical education of artisans, and seem to be well-adapted to facilitate the work of teachers and learners. The manual of Linear Drawing shows the application of practical geometry to trade and manufactures, and has been appropriately chosen as the first volume of a technical series for craftsmen. The methods of constructing geometrical figures are given without the mathematical proofs which usually accompany such problems. The application of some of the figures to decorative and mechanical work is illustrated in diagrams of the trefoil, quatrefoil, toothed wheel, ellipse, &c. Accuracy is persistently inculcated, and all the figures are admirably executed. The manual of Projection leads the student many steps further, and treats of the drawing of plans, elevations, and sections of solids. The chapter on isometrical projection explains that system of drawing in a clear and concise manner. In some of the more elaborate figures fewer lines of construction might have been used with advantage. The observations on drawing instruments, and their use, are thoroughly practical. The third treatise elucidates the principles of Building Construction, and gives some useful hints on architectural drawing. It is profusely illustrated with diagrams; these are generally good, but the minor details of a few need correction. C. W. W.

Picture Natural History. (London: Cassell, Petter, and Galpin.)

WE have submitted this volume to an abler critic than ourselves—to a little boy. He is delighted with the pictures, and interested in the text. We should like to give it to every little boy and girl we know.

Tommy Try, and what he did in Science. By C. O. G. Napier (of Merchiston), F.G.S. Pp. 302, with 46 Illustrations, by J. D. Cooper, and others. (Chapman & Hall.)

A BOOK for boys, in which science and anecdote chase each other through a pleasant narrative, until Tommy Try takes to consulting phrenologists, and then, fortunately for his young readers, brings his memoirs to a close.

### THE SUEZ CANAL

IF all went well, and we hope it did, yesterday witnessed a grand gathering on the sandy shores of a dreary bay in the Midland Sea—that sea around which so much of history has been enacted, and in whose annals the gathering in question will not be the least noteworthy incident. The Suez Canal—that problem of many centuries—is to be opened in presence of emperors, kings, princes, and potentates; of eminent engineers, famous warriors, and distinguished *savants* invited from the East

and from the West; and while the ceremonial lasts the very dreariest of the dreary wastes that here and there border the blue waters of the Mediterranean will be animated by a brilliant throng and the sound of music; and speeches will be made and healths will be drunk, and all present will join in wishing success to the memorable enterprise, which, for a time, is to furnish to Arab story-tellers and Frankish newsmongers a topic to talk about.

Dreary as the region is, it has a history. There marched with invading armies the kings whose names are recorded in Scripture; there Artaxerxes was stayed in his victorious advance by the siege of Pelusium; there are yet to be seen relics of cities and towns named in the "Itinerary" of Antoninus; there Titus marched to the siege of Jerusalem; there Baldwin and his Crusaders took the city of Pharamia: the actors in these and other exploits never dreaming that the sands of the desert, drifted by the winds and by the stream of the Nile, would so bury and alter the surface of the land, that after generations should be puzzled to identify its historical localities.

The question of a canal dates from a very early period. In high floods the waters of the Nile spread to within two or three miles of the Red Sea, which would suggest the idea of a permanent communication between the river and the great Arabian Gulf. This communication was actually established, as is said, under Ptolemy Philadelphus; but of course it fell into neglect, and was buried under the drifting sands, until one of the caliphs had it cleared out, after which there was a navigable canal between the Nile and the Red Sea for more than a hundred years. Then it was again lost, and so completely that its ever having existed became matter of doubt and dispute.

But the main project was a ship canal across the isthmus. There is some tradition that Alexander consulted with his engineer officers as to its feasibility, and that they reported against it on account of the difficulty in preventing the mouth of the canal from silting up. In a later age Sultan Selim, who had been baffled in his scheme for a canal to connect the Don and Volga, resolved on cutting one from Pelusium to Suez; and he took an important step towards accomplishing his purpose, for he conquered the country all across, and made his name a terror to the Arabs. But he did not live to cut the canal. The first Napoleon revived the project, and ordered a survey, during which the long-buried remains of the canal above-mentioned were discovered, and the question as to its having existed was settled. From that time the question of a ship-canal became a standing topic, enlisting divers opinions, among which were some to the effect that the project was simply impossible, because, as the level of the Red Sea was so much higher than that of the Mediterranean, the swift current in one direction would prevent navigation.

During this time of debate, Captain Spratt of the Royal Navy was sent, with the ship *Medina*, to make a survey along the shores of Egypt and of the Isthmus, of which an account was published by the Admiralty in 1859, entitled, "An Investigation of the Effect of the prevailing Wave Influence on the Nile's Deposits;" and this was followed by "A Dissertation on the True Position of Pelusium and Farama." Beginning at the western extremity of the Egyptian coast, Captain Spratt found that the Nile there exerted no influence, but that, owing to the prevalent north-westerly and westerly winds, the deposits brought down by the Nile were drifted to the eastward in prodigious quantity, even to the shores of Syria. This was no hasty conclusion: by a careful series of soundings and dredgings, Captain Spratt determined the identity of the sand along the sea bottom, within a given distance of the shore, with that of the deserts through which the Nile flows. Farther out to sea the sand was coralline, and of an entirely different character, while the Nile drift is made up of quartzose sand, with fine mud and particles of mica. The verifications in this particular were too