impossible to reconcile a period so exalted with the ceiling of the so-called Memnonium and the date of the heliacal rising of the dog-star on the calendar of Thothmes III. at Elephantine. Every fact connected with the Exodus is a subject of continual dispute, dates, line of march, names of the Pharaohs, place of the House of Bondage whence the Jews swarmed out. The only safe view to take is that the problem is insoluble, and that its resolution should be tied up with the sheaf of paradoxes collected by De Morgan. Mr. Villiers Stuart found the cultivation of sugar prosperous, by means, though, of that apology for slavery "forced labour," and he is indignant at the sufferings of the unhappy fellaheen, as also at the urgent scheme of taxation and the system of baksheesh and official bribery which pervades the modern as extensively as it did the ancient land of bondage; but *corvées*, it appears, are necessary for the payment of Daira bonds, and "the drachm," as in the Roman times, must be wrung out of the hard hands of peasants. While however glancing at the modern state of Egypt the interest of the writer is concentrated on the Egypt of the past, Pharaohs, their queens and their princesses, and a fair popular account is given of Thebes. His weakness is a love of dabbling in etymology, and venturing out of his depth on general questions of comparative philology. Although, for example, an occasional word may resemble its Greek or Latin equivalent, the construction of the hieroglyphic or old Egyptian and the Coptic is totally different from those two classical tongues, the Egyptian having a closer resemblance to the Semitic than the Aryan or Indo-Germanic languages. As to the Etruscan, the few known facts about its construction point to the Turanian or Tartaric family rather than the Egyptian. The origin of the Egyptians is still involved in obscurity, and belongs to the province of conjectural ethnology. More Caucasian in the north and at the earliest period, more Nigritic on the south and at a later epoch, the Egyptians seem historically a mixed race, a fusion of conterminous races of Northern Africa, and Eastern foreigners, and Nigritic blood. The oldest inhabitants still remain a mystery. One theory is that the Egyptian was the primitive man of a vast continent, the last representative being the aboriginal Australian. Amongst other interesting points are visits to the Der-vishes, especially the fortune-tellers, and a description of the ride of the Sheikh of the Saidieh over the bodies of living men, who must have suggested to the apostle, had he seen him, the subject of Death on the Pale Horse. Like the car of Juggernaut, the Sheikh of the Saidieh is said to have been abolished. The ceremony might have been the relic of an old Egyptian one, and Pharaoh riding over his prostrate enemies may have anticipated the Sheikh of the Saidieh. Altogether the work is entertaining and amusing; it is not so dry as a guide or handbook, nor so learned as an Egyptological history such as that of Brugsch-Bey, nor so elaborate as Wilkinson's Manners and Customs, and Topography, or other travels by professed Egyptologists; but its style is light and sparkling, and the principal details of history, mythology, and archæology have been fairly mastered. In the minute details of philology it is weak, but they do not affect the general reader, and are easily set right *en passant* by the expert. They will do no harm to scientific research, and they will amuse and to some extent instruct the public. The plates

are also fairly done, and their colouring renders them more than usually attractive. It is decidedly agreeable to while away the monotony of a voyage down the river of the desert, as the Nile may be justly styled, and to those whose only travels are round their room, it will convey some pleasing impressions of what a visit to Egypt might show them.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

Improved Arrangement of Scale for Reflecting Instruments

THE inconvenience resulting from the position of the scale in the ordinary well-known form of Thomson's reflecting galvanometer must have been experienced by all who have had occasion to use it much, and especially by myopic individuals. This I have been able to eliminate very easily, as hereafter described, so that there is no further craning over to see "the spot," or getting in one's "light" in so doing.

The scale is mounted as shown in the sketch, which gives a front view of one end of the scale and a cross-section of the same.

B is a wooden scale-board with longitudinal slot, as shown at C; P is the paper scale, cut so that all the division lines reach the inferior edge; A is a slip of plane glass, finely ground as to its lower half on the side towards C, from one end of the slip to the other; the scale is so placed that the lower end of the division lines just touches the ground part of the glass slip. The image of the slit with a fine wire stretched across it is focussed in the ordinary manner on the ground part of the glass, and will of course be clearly seen by the observer on the opposite side of the scale; as the line and printed divisions are in the same plane, there is no parallax; and a great increase in accuracy of

reading the position of the hair line is obtained, owing to the greater ease of observing that two lines coincide when end on to one another than when superimposed; and further, from the circumstance that the room need not be darkened.

This arrangement has been introduced at the beginning of this year by me in the testing-room of Messrs. Siemens Brothers and Co. at Woolwich, and has been most readily accepted by all my assistants, and I venture to say that any who adopt this arrangement will never return to the previous form.

I may state that I place the lamp and its slit on one side and reflect the beam of light on to the galvanometer by a mirror or total reflection prism, and further by means of two long plane mirrors reduce the actual distance between the galvanometer and scale, so as to have everything close to the observer's hand. The scale I have adopted is divided into half millimetres, and it is perfectly easy to read to a quarter of a division, and with a hand magnifying-glass still further.

This method is of course applicable to any physical instruments which are read by a reflected spot, and as there are no "patent rights" it is placed at the disposal of all.

Charlton

F. JACOB

A Note on Flame-Length

THREE years ago, whilst endeavouring to make use of flame-length as a means of testing the economic values of different qualities of coal-gas by the determination of their specific flame-