"Anatomy for Artists"

I THINK perhaps if it were known to Dr. Marshall that his "Anatomy for Artists" is not used in cases where it otherwise would be, because of his decision to omit letters of reference in the illustrations of the bones, he might think it better to alter this in a new edition.

Dr. Marshall admits that his plan may be a strain, but perhaps he does not know how great a strain it is when students are not studying leisurely but in the limited time given in schools of art to an anatomy course. Even if he disapprove of any haste in study, he would surely be sorry to hinder rather than help those who have to be quick.

I heard recently a lecturer on anatomy refer his pupils to books inferior to Dr. Marshall's, regretting, he said, to set aside the best book they could have, but adding that, from the want of reference letters, many of the students would simply be puzzled, discouraged, and confused.

I have only Dr. Marshall's book, and although the illustrations are too good to allow of any great difficulty arising, still I have found the use of it a strain. I doubt, too, if the plan secures a "more accurate knowledge of the forms," as Dr. Marshall hopes it may. Perhaps so, after a little knowledge has been gained, but in the first struggle the student has an uncomfortable haziness as to whether he has found the right groove or prominence upon a bone, which prevents his forming a definite picture of it in his mind.

Certainly letters spoil the illustrations, but might there not be small key drawings beside the larger more finished ones.

AN ART STUDENT

Meteor

I WAS just now startled by what appeared to be a vivid flash of lightning out of a perfectly cloudless sky, a fluttering flash that lit up everything brilliantly. On turning to the south-east I was just in time to see the broad path of fire that a splendid meteor had left behind it; the meteor was falling behind some trees, and I saw it very imperfectly, but it seemed very large, and indeed *must* have been from its light. I had been looking out from time to time for shooting stars all the evening, and had seen three fine ones and four or five small ones, all in the east, and appearing to come from the neighbourhood of the Bull. The sky is covered with the lovely light that always appears with shooting stars, and which I think is sometimes called homogeneous aurora. J. M. HAYWARD

Sidmouth, November 4

THE JAVA ERUPTION AND EARTHQUAKE WAVES

FOR the following facts the writer is indebted to the kindness of Herr Emil Metzger, formerly Director of Surveys in the Dutch Government service in Java. His original account, written before September 12, has just appeared in the *Globus*. The present paper is based upon that, but it contains several small additions and corrections which have been received directly from the author. Most of the geographical details here given are based on the Trigonometrical Survey of the coast of Java, which was carried out under Herr Metzger's immediate direction in 1868-69.

A line drawn eastwards from Flat Point (Vlakke Hoek, Tandjong Blimbing, or Rata), the south-western extremity of Sumatra, would touch the south coast of that island only in two points,—Tandjong Tikus and Tandjong Tūwa, or Varkens Hock. Between these promontories are the bays of Semangka and Lampong.[1] The opposite coast of Java follows generally a north-easterly direction almost to Anjer. Along this stretch it deflects, however, more than once towards the south and the east, and forms Seagull, Welcome, and Pepper Bays. Midway in the channel of the Straits, and on a straight line drawn from Tandjong Tikūs (the western side of Lampong Bay), to the western head of Pepper Bay, lies the Island of Krakatoa (called also Krakatau, Rakata), with several smaller islands near it. Sebuku and Sebisi are two islands situated between Krakatoa and the south-eastern extremity of Sumatra. About half way between Anjer and Point St. Nicholas, and only separated from the mainland by a narrow belt of water, is the Island of Merak (Pulu Merak). On the opposite mainland were the extensive quarries of Merak, which have now totally disappeared. Further, in the narrowest part of the navigable channel, lay a group of islands, of which the largest, Thwart-Way or Sunghian (Dwars in den Weg), has been rent into five pieces.[1]

From the manner in which Sebisi (the peak 2818 feet high) and Krakatoa (peak 2700 feet) rose immediately from the waves, and from the great depth of the sea around them, Junghuhn was led to conclude that Sumatra and Java, in spite of the corresponding configuration of their approximating coast-lines, and the fact that they are both volcanic, do not belong to one continuous formation. The Island of Krakatoa, considered by Junghuhn to be a continuation of the mountain system on the adjoining coast of Java, was about five miles long by about three broad; and close at its foot were the two small islands Verlaten and Long, on the west and east respectively. The Trigonometrical Survey of 1868-69 fixed the position of the cone of Krakatoa as 105° 26′ E. long, and 6° 8′ S. lat. Like most of the islands in the Sunda Straits, Krakatoa was clothed from base to summit with a luxuriant growth of forest and of tropical vegetation. When in the course of the survey the northern face of the mountain was visited in the latter year, several warm springs were found—a common enough thing, however, in these islands. Moreover, Krakatoa, as well as Sebisi, was at that time totally uninhabited, being only visited occasionally by the inhabitants of the neighbouring coasts for the sake of the products yielded by the woods.

On May 20 in the present year several shocks, accompanied by loud explosions and hollow, reverberating sounds, were observed at Batavia and Buitenzorg, each about 100 miles distant from Krakatoa. That these phenomena were not seismical was recognised at once; the magnetic needle of the magneto-meteorological observatory showed no deviation, only a trembling motion in a perpendicular direction. A few days later came the news that a volcanic eruption had taken place on the Island of Krakatoa, where nobody had once thought of looking for the seat of the phenomena. The captain of a mail steamer, however, which passed the island at about 6 p.m., has since reported that the needle on his ship was violently agitated, being spun round repeatedly.[2]

From the deck of another vessel which was passing about eight o'clock on the evening of the 22nd, a dome-shaped mass of vapour, mingled with smoke of a dark gray colour, was seen to rise from the lower part of the island. The first thing noticed was from ten to fifteen dark red "sheaves" of fire flashing up in rapid succession from the base of the column. These were followed by explosions, more or less loud, resembling discharges from artillery, so that the ship, which was sailing at no great distance, distinctly felt their influence. In the upper part of the volume of smoke appeared an uninterrupted series of flashes, differing in no respect from ordinary lightning flashes, except that they were discharged concentrically upon the column from the atmospheric clouds surrounding it. The heat emanating from the locality of the eruption was sensibly felt on the hands and face at a distance of nearly two miles away; the presence of a powerful marsh-gas was also easily detected. Several nautical miles past Krakatoa a thick shower of fine dark-gray sand continued to fall upon the ship for the space of

[1] See the map of the Sunda Straits in this journal, September 6, 1883, p. 444. With this compare the map given in *Globus* (vol. xlv. No. 15, p. 233), where also fuller geographical descriptions may be found than could be given here.

[1] The earliest telegrams spoke of a volcano Sungepan, which had been split into five craters. This appears to have been a mistake; there never was a volcano of this name in this place, nor is there now. It is only an island.

[2] See the Dutch *Natuur*, September 15, 1883, p. 262.