order of magnitude. Principal maxima, June 7, 21h. 35m., and June 9, 18h. 15m.; secondary maximum, June 9, 7h. 20m.

Epoch June 13, 6h. 30m., twenty-eighth order of magnitude. Principal maximum, June 11, 1h. 5m.; secondary maximum, June 10, 22h.

Epoch June 12, 6h. 30m., eighth order of magnitude. Principal maximum, June 12, 9h. 55m.; secondary maximum, June 13, 16h. 45m.

Epoch June 13, 7h. 30m., twenty-eighth order of magnitude. Principal maximum, June 14, 22h. 10m.; secondary maximum, June 13, 11h. 40m.

Epoch June 16, 2h. 30m., twenty-second order of magnitude. Principal maximum, June 15, 21h. 10m.; secondary maximum, June 14, 10h. 45m.

Epoch June 18, 1h., approximately second order of magnitude. Principal maxima, June 15, 16h. 10m., and June 17, 12h. 55m.; secondary maximum, June 17, 5h. 10m.

Epoch June 18, 4h., fourteenth order of magnitude. Principal maximum, June 17, 22h.; secondary maximum, June 16, 18h. 50m.

Epoch June 26, 19h., eighth order of magnitude. Principal maxima, June 24, 15h. 50m., and June 25, 14h. 45m.; secondary maximum, June 25, 4h. 30m.

Epoch June 27, 12h. 30m., thirteenth order of magnitude. Principal maximum, June 26, 13h.; secondary maximum, June 27, 11h. 20m.

Epoch June 26, 19h., ninth order of magnitude. Principal maxima, June 27, 1h. 5m., and June 28, 21h. 45m.; secondary maximum, June 28, 10h. 20m.

During the first week in June there is not much meteoric activity, the first important maximum of the month occurring on June 7, 21h. 35m. Another interesting maximum, but not so large, is that of June 11, 1h. 5m. Of the two principal maxima of the epoch of June 18, 1h., that due on June 15, 16h. 10m., is the more noteworthy, and this remark is also specially applicable to the maximum of June 28, 21h. 45m. JOHN R. HENRY.

May 27.

Solar Halos on May 17.

READERS of NATURE may like to hear of a curious set of halos seen at Goudhurst on May 17 at 6.45 p.m.

The first thing noted was an object high over the setting sun, just like a moustache brushed into a fierce upward curve. This had a metallic lustre like burnished brass, and marked the contact between two coloured circles, the top one, of which only about one-sixteenth was visible, showing two colours, silvery blue on the concave and rusty buff on the convex. The lower halo was complete down to the horizon, and showed all the colours, while from the sun itself a long slender cone rose about half-way up to the moustache, and had exactly the same colour and lustre.

Both halos were enveloped in a huge outer one, of which the top was visible for a few seconds only, and that while the others were very dim. There was thus no chance of seeing the relation of it to the top inner circle.

A rough attempt to measure the radius of the big halo with the hand and outstretched thumb seemed to make it subtend about 44°, and the inner one by a still rougher method about 23°; perhaps someone will be able to tell me whether anything near these angles is possible.

To the eye the outer circle seemed just double the inner one, but the top of it, during the brief time that it was visible, seemed to narrow almost to a pointed arch. W. P. HASKETT-SMITH.

United University Club, Pall Mall, May 24.

A Mineral from Copper Ore.

A FEW weeks ago I received a quantity of copper ores from Atacama, Chile, and on examining them was struck by the peculiar appearance of one specimen. The ground mass consisted of a kind of quartz conglomerate, containing some fissures, which were filled with a loose aggregate of minute clear and bright-green crystals. These crystals, of about one-sixteenth of an inch in length, are very thin, and belong to the monoclinic system. Some are double pyramids, others more columnar, with base, but the majority are absolutely distorted, owing to their growth being impeded by others of their kind.

This mineral seemed to be natro chalcite,

$$Na_2SO_4Cu_4(OH)_2(SO_4)_22H_2O,$$

but even on heating the crystals for more than an hour up to 170° C. no loss of water occurred. On examining the crystals we found that they contained only 32 per cent. of copper, but 48 per cent. of SO_4, instead of, as in natro chalcite, 39 per cent. Cu and 43 per cent. SO_4.

The formula for the mineral would therefore be:

$$CuSO_4Cu(OH)_2Na_2SO_4,$$

viz.

$$Cu\begin{matrix}<OH\\ <SO_4Na_2SO_4.\\ <OH\end{matrix}Cu$$

The crystals are insoluble in cold water, but get broken and partly dissolved in boiling water.

They are easily soluble in acids or liquid ammonia.

P. WALTHER.

44 Sanderson Road, Jesmond, Newcastle-on-Tyne, May 15.

Clouds and Shadows.

GIVEN a background of fine stratus, blue-black shadows are often thrown upon it, particularly by the setting sun from mountain peaks or the summits of masses of cumulus. On this coast such shadows attain a great length; there may be four or five ray-like shadows diverging from the sunset glow to the zenith, becoming broader as they rise. This seems quite simple, the shadows being cast by the reflected light of the glowing clouds in the west, not by the sun itself, of course; but what to me needs explanation is the reappearance of the rays in the east. Opposite the sunset is a broad band of lilac-pink extending for 30° or so towards the zenith, and upon this the dark bands reappear, converging and narrowing upon a point opposite the sunset. In some cases one can almost trace the shadow bands the whole way from the west over the zenith to their eastern focus. The appearance is very striking, but I have seen no description of it.

CYRIL CROSSLAND.

Sudan Government, Red Sea Province, Office of the Marine Biologist, Dongonab, May 5.

THE ASIATIC SOCIETY OF BENGAL.

ALL societies which attempt, as the Asiatic Society of Bengal professes to do, to cover the whole field of scientific knowledge are at present exposed to obvious danger. In the first place, the growth of specialism, with societies and journals devoted to single branches of learning, tends to attract important contributions to periodicals which provide for the wants of the botanist, chemist, or geologist. The Bengal