

but of a tint not familiar to me, in the western horizon, extending from the north-west to a point near the South Pole. The centre of the mass was about due west, and was there some  $25^\circ$  above the horizon. There was no wind; there were no cirri. The sky was clear and the air transparent, and I could not associate the appearance with anything like a "cloud-glow." It seemed to me like the blaze of a great conflagration seen through a smoky medium, and I expected every moment to see the fire-engines rush past me. At dark (6 p.m.) there were long pallid streaks of polar auroral light, proceeding from a centre in the north-west. These presented no signs of the flickering activity usually accompanying auroral manifestations. Soon after 7 p.m. all traces of polar aurora vanished. It may be mentioned that, while instances of aurora have been common here throughout the autumn, on one occasion only have flashing rays and beams been present.

Every sunset since the 9th, when the condition of the weather permitted—somewhat rarely—the remarkable glow under notice has been visible in the west, sometimes marked and prominent, as on the 17th inst., at others somewhat indistinct, according as the state of the atmosphere served.

Here to-day, after the storms of yesterday, blue sky prevailed, and the afternoon proved favourable for observation. The sky was clear; the air, washed by frequent rains, was transparent; wind south-west and tranquil; barometer low; thermometer at 2 p.m.  $48^\circ$ . At 4 p.m. a great arc like bank of dusky coloured vapour, extending as before from north-west to south, was discernible. On the sun declining behind the mass, it was suddenly shorn of its beams, and looked like the moon when rising. In a few minutes the vaporous bank assumed the peculiar vivid ruddy hue distinctive of the phenomenon; the blue colour of the sky changed to green. The green was speedily replaced by the ruddy tint before described, which presently suffused the whole hemisphere, tinged the entire landscape, and presented an appearance of which I have never seen the like. The colour was deeper round the horizon than at the zenith. The colour gradually faded as the vaporous glowing mass sank in the western horizon, and at 5.30 had left no trace.

Worcester, November 26

J. LL. BOZWARD

P.S.—The atmospheric effect described as cloud-glow was visible here to-night. There was a cloud canopy, but at 4.30 the ruddy light was visible under the canopy over the whole hemisphere. The ruddy light was manifest in a marked manner at sunrise on the 24th, and was discernible this morning. Probably the phenomenon is attributable to the aqueous vapour in suspension in the atmosphere.

Worcester, November 27

J. LL. BOZWARD

THE remarkable cloud-glow after sunset on November 9 was seen by me at Sudbury on the southern border of Suffolk. I was struck by the softness and uniformity as well as brightness of the glow, and by its contrast with the pale greenish hue of the clear sky around, from which it was separated by a frame of nearer clouds in shade. When I first noticed it the (upper) margin was about  $15^\circ$  above the horizon (estimated from memory). Presently the glow diminished in brightness and increased in extent upward to about  $40^\circ$  above the horizon; and at the highest (nearest) part the delicate structure of the cirrus was visible.

Was it noticed at any place further north than Sudbury?

Wordbridge, November 25

HUBERT AIRY

IN travelling up from Leeds on Monday afternoon I was able to watch the whole progress of the remarkable sunset sky on that afternoon. The sun went down quite clear, and the sky was all but cloudless. Shortly after sunset a crimson arch appeared stretching from south-east to north-east, with a very clear greenish blue sky beneath it in the east. This crimson arch gradually proceeded westwards over the sky, and at about 4.20 was stretching from south-west to north-west. At this time it developed a number of well-defined, pointed rays or streamers radiating from the point where the sun was below the horizon. Between the arch and the western horizon was a sky of a bright silver-white colour, which was so brilliant that it gave us quite a second daylight. The crimson arch continued to sink towards the western horizon, the streamers still retaining the same relative positions. At about 4.40 it formed simply a bright crimson band along the western horizon, and the streamers still pointing out from it gave the appearance of some large forest on

fire in the west. Finally, at 4.50, when we were some twelve miles north-west of Nottingham the crimson arch had entirely vanished below the horizon. At one time, when the arch was at its brightest, with the silver-white sky beneath it, it had exactly the appearance of the aurora, except that the streamers remained fixed in relative position. In the silver-white sky there seemed to be a very thin cloud layer.

A. TARN

31, Mornington Road, N.W., November 27

OPTICAL phenomena of a peculiar nature appeared here on the 25th and 26th inst. On the 25th, shortly before sunset, the atmosphere, which was exceedingly clear except in the west, was suffused with a brilliant tint of lake. Over and to the left of the sun, which appeared to shine with a remarkably white light, there was a heavy cumulus, the edges of which were tinted with a strange, olive-green colour. After sunset the sky in the east became gradually of a more brilliant rose tint, which continued a long time after the sun's rays ceased to be reflected from a long, curled streak of cirro-filum, at an altitude of 2600 feet. The sky nearer the zenith at 5 p.m. appeared to be of a sea-green tint. A little later, the most brilliant rose-coloured glow covered the western and south-western sky, which continued up to about 5.45 p.m., and might easily have been mistaken for a red aurora.

On the 26th a similar phenomenon took place upon a grander and more unusual scale. At 3 p.m., when the sky was totally devoid of higher cloud, the sun, which was shining with a remarkably white light like the electric light, was surrounded by a very broad halo of a uniform pale pink colour, whose exterior margin was very ill-defined. This halo was of about  $22^\circ$  radius and was totally devoid of the usual prismatic tints. A little before sunset the sky, which was clear except in the distant south-west, where there was a thin bank of cirriform cloud, became of a bright salmon colour. At 4.35 there was a beautiful display of *rayons du crépuscule* in the east-north-east, there being six larger and some smaller lake-coloured belts. But the most splendid phenomenon was yet to come. From 5.5 to 5.15 p.m. a brilliant arc of red light having the position of the sun for its centre, and having an altitude of about  $25^\circ$ , illuminated the western heavens. This light was bright enough to cast a vivid red glare on all objects seen in the opposite direction. From this arc throughout the whole of its extent arose bright rays of red light, divergent from the sun's position, the perpendicular one in the centre extending nearest to the zenith. The arc gradually sank towards the horizon, following the sun's westward declining course.

The barometer at the time was very low, the temperature high, and there was marked "visibility." To-night (27th) there is again a red glow, seen feebly through a thick sheet of cirriform cloud.

Is it possible that particles of ice-dust carried upwards to a great altitude in the extensive cyclonic disturbances now prevalent may have produced these phenomena? In any case it seems clear that the reflecting matter was in the first case very equally diffused, having no tendency to arrange itself in strips or cloudlets; in the second place of considerable vertical thickness; and thirdly, that its greatest altitude was upwards of thirteen English miles.

I hope that some of the readers of NATURE who have witnessed these phenomena may be able to explain them, and not least of all the pink halo.

ANNIE LEV

Ashby Parva, Leicestershire, November 27

IN connection with different singular atmospheric phenomena noticed lately in India, Ceylon, and even in our own country, I think an extract from a letter received by the last Cape mail may prove of interest to some of your readers. I may premise that my correspondent resides upon an open Karoo plain, where the atmosphere is always clear; such a "phenomenon" as a *fog* being unknown, and where the sunsets generally are of a beauty that I have not seen surpassed even in the tropics, a beauty, however, very evanescent, for it will be remembered that in those latitudes there is little or no twilight.

The letter is from about thirty-five miles south of Graaff Reinet, and is dated October 21. "Many of us out here are much interested in a very peculiar light visible in the west nearly every evening about an hour after sunset. It lasts until quite dusk, and throws a sort of lurid glare over everything, and the sky is angrily red; I have not seen anything about it in the