

may be got rid of, or at least, so much paled as to betray their character as interlopers. This, however, is an amount of labour hardly to be expected of those who make tubes in a commercial way, and it is to be regretted that in Mr. Capron's painstaking research, he was compelled to employ such tubes instead of preparing them for himself. In a future research we would suggest the employment of tubes thoroughly heated and washed out with air in the first instance, and then worked with a blowpipe fed with pure hydrogen.

Unfortunately throughout, the tubes employed both by Mr. Capron and by Dr. Vogel seem to have been of doubtful purity. That figured on plate xiv. as hydrogen, contains bands of most suspicious resemblance to those of nitrogen, while the oxygen tubes, beside the one or two lines which seemed peculiar to themselves, gave others which were proved by direct comparison, to coincide with those of carbon and hydrogen, though the relative intensities seemed somewhat altered.

Supposed coincidences have been pointed out by Angström, Vogel, and others, between the auroral spectrum and those of the various gases, such as oxygen, nitrogen, and hydrogen, which are present in the atmosphere. Unfortunately these coincidences do not extend to the one bright line which has been accurately measured, but only to the fainter ones, the positions of which are so doubtful that they might be made to correspond with any spectrum the lines of which were tolerably numerous, so that, intrinsically probable as they may be, we cannot regard them as positively established.

Absolutely no coincidence has been made out between the bright yellow-green line of the aurora and a principal one of any other known spectrum, and the same may be said of the sharp red line which occasionally flashes out in the spectrum, of red auroræ. Mr. Capron, however, points out that the green line coincides with a faint atmospheric absorption band, while the red line seems to occupy the position of the well-known *a* line of the solar spectrum, which Prof. Smyth has shown to be due to dry air.

It would not be fair to conclude our notice of "Auroræ" without a few words of praise to the admirable illustrations, several of which are chromolithographs. Of these perhaps the best in artistic effect is a facsimile of a water-colour drawing of a white aurora seen by the author at Kyle Akin in Skye. But in fact the whole appearance of the book suggests at first glance art rather than science, and we should suppose it is but rarely that a purely scientific treatise has appeared in so ornamental a dress.

#### OUR BOOK SHELF

*A Treatise on Metalliferous Mines and Mining.* By D. C. Davies, F.G.S. 8vo. (London: Crosby Lockwood and Co., 1880.)

THE objects of this book, as stated in the preface, are "to describe in a concise and systematic manner the conditions under which metallic ores are found in different countries in the world," and further, "by defining the zones occupied by the various metallic ores to lessen somewhat the amount of unsuccessful search for them." For the first purpose the author notices a large number of mines in various parts of the world, partly from his own observations and partly from accounts published in special journals and in the transactions of scientific

societies; and for the second, he deduces from such descriptive matter certain general conclusions, which, in their more important points, are as follows:—

"Gold and silver never occur in strata newer than the carboniferous period."

"Copper ores with trifling exceptions are only found in the lower Cambrian carboniferous and new red sandstone formations."

"The highest horizon of lead ores is in the carboniferous limestone."

The conclusions are apparently derived from the study of phenomena in Wales, and to render them universally applicable all that is necessary is to reconstruct the geology of the rest of the world to suit them, which the author does in a thorough-going fashion. Thus the system requires for Cornwall that the age of the granites should be Laurentian, and the killas and other schistose rocks Cambrian, Silurian, Devonian, &c., in regular succession; and therefore the author concludes that the received view which makes the granite post-carboniferous is a mistake, and corrects his authorities accordingly, even when quoting their observations. Thus in reproducing Dr. Foster's account of the Hay Tor iron ores he disputes their probable carboniferous age, and states that they may belong to an older group, and that possibly of a still older age are the deposits of the West of Ireland, which are found interstratified on the basaltic and porphyritic rocks that skirt the west coast. It appears from a preceding page that by these are meant the iron ores of Antrim, which occur in miocene basalts on the north-east coast between Larne and the Giant's Causeway, and about whose age no question can possibly be raised by any one with the smallest geological knowledge.

Much of the information concerning foreign mines is exceedingly inaccurate, indeed it is difficult to see whence some of it is derived. For example, on p. 240, in a paragraph describing the zinc ores of Silesia, it is stated that the calamine of that country averages 20 to 30 per cent. of metallic zinc, which by selection and dressing is brought up to 70 per cent.; that in 1876 sixty-four mines produced 31,315 tons of zinc ore, and a reference to a paper by Huene in the *Journal* of the German Geological Society is given as an authority. As these statements are contrary to what is generally known upon these subjects, an attempt has been made to verify them; and it appears that (1) the average yield of the Silesian zinc ores in 1876 as smelted was 11.84 per cent.; (2) the production of zinc ores in Silesia in 1876 was 449,374 tons; (3) the paper by Huene, published in 1851, has nothing whatever to do with Silesia, as it describes some zinc mines at Bergisch-Gladbach near Cologne.

The above examples taken quite at random will be sufficient to show the generally untrustworthy character of the book. H. B.

#### 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.]

#### Why the Air at the Equator is not Hotter in January than in July

THE following, I think, is the explanation of Mr. Fisher's difficulty (*NATURE*, vol. xx. p. 577), why the January temperature at the equator when the earth is in perihelion is not much higher than in July when in aphelion. The temperature to which Mr. Fisher refers is the ordinary temperature as indicated by the shade thermometer, which of course is simply that of the air. The difficulty is more apparent than real, for if we examine the indirect results which follow from the present distribution of land