The Magnetic Separation of Heavy Minerals in the Field.

FOR some time I have been trying to find a simple and rapid field method of separating the magnetic and faintly magnetic from the non-magnetic minerals in the residue obtained by panning a river sand or gravel. In the laboratory this is usually done by means of the electromagnet. I have experimented in the field with a portable electromagnet, but, apart from the disadvantages of weight, bulk, and clumsiness of manipulation, the dynamo is readily liable to go out of order and render the whole apparatus useless. My colleague, Mr. Longbottom, has experimented with a compound magnet composed of three or four simple horseshoe magnets bound together and fitted with adjustable poles. This gives admirable results, and is to be recommended for fractional separations, but the constant adjusting and re-adjusting of the poles becomes tedious in actual practice.

I find, however, that all the advantages of the electromagnet can be obtained in the field by the combined use of an ordinary large (8-inch) horseshoe magnet and a penknife. A small quantity of the residue to be examined is taken, and the magnetite removed in the usual way. The magnet is then held vertically over the sample, and the bright steel blade of a penknife laid flat across one of the poles with the back of the blade downwards. By gradually approximating the point of the blade to the other pole, and thus narrowing the space between the poles themselves, the power of the magnet is increased, and not only iron ores, but all the dark-coloured silicates and garnets can be rapidly and completely removed from the sample. The residue may then contain such valuable minerals as tinstone and monazite, which when in small quantity are frequently masked by the other minerals present. This method has the further advantage that any single grain can be rapidly tested by turning the point of the blade slightly down below the level of the poles and bringing it close to the grain in question.

As an invaluable field method, as a useful laboratory method where an electromagnet is not available, and as an actual working method for teachers of practical geology, I can recommend the one above described for simplicity, inexpensiveness, and trustworthiness.

J. D. FALCONER.

Zaria, Northern Nigeria, May 24.

The Sky Glows.

THESE phenomena on about June 30 and July 1, referred to in my letter (NATURE, July 9, p. 221), I termed displays of Auroræ, and was prompted to apply that title by the descriptions given in some of the London newspapers, which stated that well-defined streamers had been observed from the metropolis.

But certain features of the glows struck me as being essentially different from exhibitions of normal Auroræ Boreales. No streamers whatever were seen here, but my view is somewhat restricted at low altitudes, and I thought they might have evaded recognition. The clouds observed were of peculiar character, and some of them showed traces of spiral formation. Though thin, they were strongly illuminative, and stars shone through them with surprising distinctness.

Here the display ranged over four nights, for on June 29 the sky was very light, and stars and Milky Way extremely faint, but clouds were very prevalent. On July 2 some attractive, coloured-cloud scenery was presented in the north-west and north, but the sky had not the bright, weird aspect it wore on preceding nights, and after midnight I saw nothing unusual.

Sounds proceeding from the north were strikingly audible in the still air, and I never remember to have heard the noise from distant railway trains in north-east so loudly before.

Whatever the true nature of the recent exhibition may have been, it is certain that something in the air exercised the capacity of reflection in a very high degree. The period was one of great heat and thunderstorms.

During past years, while engaged in meteoric or telescopic observation, I have occasionally noticed great differences in the transparency of the air. Occasionally the lightness of the firmament has struck me as being due to influences beyond local atmospheric causes. The variations have been great without palpable reasons, but no doubt there are different explanations applicable, though the observer finds it difficult to assign satisfactory ones in all cases.

W. F. DENNING.

A Remarkable Solar Halo.

ON July 2, one of the days on which Miss Stevens saw a halo at Oxford (NATURE, July 9, p. 221), a very bright halo was visible in the neighbourhood of Torbay. I first noticed it about 9 a.m., and it remained visible well into the afternoon. It attained its greatest brightness from 11 a.m. until noon. On looking at it through dark glasses it exhibited a somewhat remarkable form; the main halo had the usual radius of about 22°, but east and west were arcs of which the greatest distance from the sun was about 25°; these arcs gradually ran into the 22° halo. The effect was somewhat as though an elliptical halo were superposed on a circular one, the parts where the two coincided being of enhanced brightness. Below the sun there were at times fragments of halo at 44°. Masses of cirrus drifting from an easterly direction passed across the halo at times and partially obscured it, but probably had no part in its formation; it could be seen shining through the thinner parts of these clouds, and it regained its brightness as soon as they passed over. The halo was evidently formed by thin clouds above the ordinary cirrus, but no definite structure was visible to enable one to determine which way this layer was moving.

CHARLES J. P. CAVE.

Brunhilda, R.Y.S., Fowey, July 12.

Proposed Admission of Women to the Fellowship of the Chemical Society.

As president of the Chemical Society, I shall be glad if you will publish the accompanying letter referring to the correspondence as to the admission of women to the Fellowship of the Chemical Society which appeared in NATURE of July 9.

W. RAMSAY.

You have doubtless received a letter emanating from Oxford dated July 1 enclosing a circular and copy of the petition recently presented to the Council of the Chemical Society requesting the Council "to take such steps as may appear desirable to ascertain the wishes of the Society as a whole in regard to this question."

The envelope enclosing the above communications bore the familiar printed address-slips which might well lead Fellows to conclude that they were issued by authority of the Council. This is not the case.

The Council resolved that the statement of arguments on both sides which was issued to Fellows on June 23 was better calculated to elicit an unbiassed opinion of all Fellows if sent alone.

The course adopted by the signatories of the Oxford circular of July 1 is, therefore, not only unauthorised, but is in direct opposition to a resolution of the Council of which the signatories are members.

W. RAMSAY (*President*).
HORACE T. BROWN (*Foreign Secretary*).
ALEX. SCOTT (*Treasurer*).
M. O. FORSTER, ARTHUR W. CROSSLEY (*Secretaries*).

Linnæus's Authorities.

I SHOULD be very much obliged if any of your readers could supply me with the full titles of the works cited by Linnæus as follows in the twelfth edition (1766) of the "Systema Naturæ," p. 33:—

"Bont. jav. 84 *t.* 84; Koep. itin. *c.* 86; Dalin. Orat. 5."

I have looked up the works of Bontius in the British Museum, but they are not *ad hoc*. Also where, if anywhere, did D. Braad publish an account of his journeys to India?

KARL PEARSON.

Biometric Laboratory, University College, London.