necessary to dehydrate and reduce the ferric hydroxide to bog ore.

THE English Ceramic Society has recently issued the twelfth volume of its Transactions, and is to be congratulated on the good work which it continues to do in furthering the application of scientific methods to so important an industry. Attention may be directed specially to a paper by Mr. A. J. Campbell in which the application of "surface combustion" to pottery practice is suggested, and to a description by Dr. W. R. Ormandy of an "Electrical Process for the Purification of Clays." This consists in partially coagulating the emulsified clay by the addition of electrolytes, and then further purifying the emulsion by passing it through a vessel containing electrodes differing in potential by 60 to 100 volts. The chief impurities are electropositive, and can thus be removed, even when present in very fine particles. The clay-substance is electronegative, and is laid down in the form of a continuous blanket $1\frac{1}{2}$ yards wide and $\frac{1}{4}$ in. thick. It is deposited in a remarkably dry state with only 18 to 20 per cent. of water, and may contain as much as 99·5 per cent. of china-clay substance.

MESSRS. J. AND A. CHURCHILL have nearly ready an English translation of the Italian work, "A Treatise on General and Industrial Organic Chemistry," by Dr. Ettore Molinari. The work of translation has been carried out by Mr. T. H. Pope, of the School of Malting and Brewing of the University of Birmingham.

AN examination of "The Social Guide, 1913," which has now been issued by Messrs. A. and C. Black, at the price of 2*s*. 6*d*. net, shows that the editors regard some scientific meetings at least as social events. Attention is directed, for instance, to the meetings of the Royal Society, the Royal Institution, the Royal Geographical Society, and the British Association. The University Extension meetings arranged in the summer by the Universities of Oxford and Cambridge are also referred to, but, speaking generally, the matters of prominence relate to sports and amusements. The subjects are arranged alphabetically, but an index would assist reference greatly.

ERRATUM.—The term $\frac{\Sigma P - P.N}{\frac{N}{2}}$ on p. 279 of NATURE of May 15 should have been $\frac{\Sigma P - P.M}{\frac{N}{2}}$.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES FOR JUNE :—

June 1. 4h. 4m. Venus in conjunction with the Moon (Venus 4° 38′ S.).
,, 12h. 0. Mercury in superior conjunction with the Sun.
4. 0h. 25m. Saturn in conjunction with the Moon (Saturn 6° 22′ S.).
,, 16h. 4m. Mercury in conjunction with the Moon (Mercury 3° 48′ S.).
7. 4h. 40m. Neptune in conjunction with the Moon (Neptune 5° 9′ S.).
19. 14h. 26m. Jupiter in conjunction with the Moon (Jupiter 4° 47′ N.).
June 21. 8h. 8m. Uranus in conjunction with the Moon (Uranus 3° 27′ N.).
,, 13h. 9m. Sun enters Sign of Cancer—summer commences.
22. 6h. 0m. Vesta in conjunction with the Moon (Vesta 0° 31′ N.).
23. 22h. 35m. Mercury in conjunction with Neptune (Mercury 2° 11′ N.).
24. 2h. 0m. Venus at greatest distance from the Sun.
29. 5h. 5m. Mars in conjunction with the Moon (Mars 4° 51′ S.).
30. 7h. 4m. Venus in conjunction with the Moon (Venus 7° 44′ S.).

COMET 1913*a* (SCHAUMASSE).—*Astronomische Nachrichten* No. 4652 contains not only numerous observations of the comet which Mr. Schaumasse discovered, but three sets of elements and ephemerides computed by Kiess and Nicolson, Ebell, and Fayet and Schaumasse. The observations made between May 7 and 11 give the magnitude between 9·5 and 11.

The following parabolic elements are those calculated by the last two observers mentioned above, and they are based on Schaumasse's observations at Nice on May 6, 7, and 8 :—

$T = 1913$ May $15{\cdot}4222$ M.T. Paris.
$\omega = 53^\circ\ 32'\ 8''$
$\Omega = 315\ 21\ 7$ } 1913·0
$i = 1{\cdot}2\ 31\ 26$
$\log q = 0{\cdot}162920$

Ephemeris for 12h. M.T. Paris.

		α h. m. s.		δ ° ′
May 30	...	17 45 55	...	+38 31
June 1	...	17 15 56	...	+40 6
,, 3	...	16 45 33	...	+41 9
,, 5	...	16 15 50	...	+41 35

EFFECTIVE TEMPERATURES OF STARS.—An important communication is published in the *Comptes rendus* of May 5 (vol. clvi., No. 18, p. 1355), by Dr. Charles Nordmann, relative to the effective temperatures of stars. It will be remembered that Dr. Rosenberg published recently (*Astronomische Nachrichten*, No. 4628, p. 360) the results of measures of the effective temperatures of seventy stars based on the determinations of the intensity of the photographic spectra. It will be remembered also that Dr. Nordmann made a like series of measures based, on the other hand, on visual observations. As the two series of measures deal with different regions of the spectrum they may be considered as independent determinations, and Dr. Nordmann here compares the results obtained in cases where the same star has been measured. The following table shows the resulting comparison :—

	Effective temperatures (in absolute degrees)		
	Nordmann λλ 460–630	Rosenberg λλ 400–500	Spectral types (Lockyer)
δ Persei	... 18500	... 15500	... Algolian
ε ,, ...	... 15200	... 23000	... Crucian
β ,, (Algol) ...	... 13300	... 12000	... Algolian
α Lyræ (Vega) ...	... 12200	... 22000	... Sirian
α Persei	... 8300	... 6500	... Polarian
α Ursæ Minoris (Polaris) ...	8200	... 5200	... ,,
α Canis Minoris (Procyon) ...	6800	... 7000	... Procyonian
γ Cygni	... 5620	... 5100	... Polarian
Sun	... 5320	... 4950	... Arcturian
α Aurigæ (Capella) ...	... 4720	... 4500	... ,,
β Andromedæ ...	... 3700	.. 2650	... Antarian
α Tauri (Aldebaran)...	... 3500	.. 2150	... Aldebarian

Dr. Nordmann directs attention to the good agreement of the two series, with one or two exceptions, which he discusses, and points out that if the stars be arranged in the order of ascending temperatures they become hotter and hotter as one passes from the

Aldebarian and Antarian types to helium stars. This, he states, conforms to the thermal classification which Sir Norman Lockyer deduced from his qualitative study of the stellar spectra.

THE WORK OF SIR WILLIAM HUGGINS.—Under this heading, in *The Astrophyical Journal* for April (vol. xxxvii., No. 3) Prof. G. E. Hale takes the opportunity of again cheering up those astronomical observers who possess only a small and limited instrumental equipment, and may conceive the idea that the multiplication of large instruments renders any attempt at research on their part useless. Being the director of an observatory which may be considered the best equipped, contains the largest instruments, and is situated on a nearly ideal mountain site, it may appear that he is only trying to console workers with modest means. But this is not so. Prof. Hale knows the value of both large and small instruments, and there is abundant work for both classes. The reader should look through this article and he will find depicted there the magnificent work of amateurs, in spite of the fact that large instruments were in active employment at the time the work was done. Sir William Huggins he takes as an example of one of "that great English group of amateurs," and he directs attention to the fact that while in 1856 he acquired his first telescope, a 5-in. refractor, in 1858 an 8-in., and in 1870 an 18-in. reflector, such powerful instruments as 15-in. refractors at Pulkowa and Harvard, Lord Rosse's 6-ft. reflector, Lassell's 4-ft. reflector, the Melbourne 4-ft. reflector, &c., did not deter him from securing results of the highest importance.

Prof. Hale concludes in the following terms:—"Every investigator may find useful and inspiring suggestions in the life and example of Sir William Huggins. Their surest message and strongest appeal will be to the amateur with limited instrumental means, and to the man, however situated, who would break new ground."

THE SCOTT EXPEDITION TO THE ANTARCTIC.

THE huge audience which filled the Albert Hall on Wednesday evening, May 21, on the occasion of the Royal Geographical Society's meeting to hear Commander Evans's account of the Scott expedition to the Antarctic, showed no less by its eager plaudits than by its suppression of them at the fitting moments that the public sense of the tragedy of the expedition is not dulled by familiarity. Yet throughout the proceedings there was no false note of sentiment; the president, Lord Curzon, stated, without risk of misunderstanding, that the tribute of the society to the dead had been paid already, and begged any (and there were some) who felt that "this great reception is inconsistent with the feelings of sorrow which affect us all" to "abandon such a reflection," for that he was sure that Scott himself would not have had his companions forgo the reward of their labour. And the story of the expedition was told by Commander Evans very simply; he exhibited the sense of loss which all his collaborators share in a few words only, and by implication rather than by direct statement. Finally, the tribute paid by both president and lecturer to the generosity of the public and to the Government for the provisions made for the dependants of those who are lost showed that any criticism which has been directed against the allowances made from the public funds is without official concurrence.

It was satisfactory to learn that the funds subscribed will admit of the proper publication of the scientific results of the expedition. As regards these results, not a great deal emerged from the lecture which was not already realised by those who have taken interest in this aspect of the work accomplished. Nor was it to be expected that any detail should be given within the compass of a single lecture, though long; for it was long, and a tribute is due to Commander Evans, who so ably sustained the strain of delivering it, and never for a moment allowed the intense interest of the audience to wane. And here a word, though perhaps scarcely appropriate in this place, may be permitted in commendation of the singularly well-chosen organ music which was given before the opening of the proceedings.

But if it is scarcely possible, after hearing the lecture, to add materially to what is already known as to the scientific results of the expedition, it is right at the outset to record the full measure in which the value of those results has clearly been enhanced by photography. Obviously no photographer to any expedition has laboured with a more thorough sense of his duty, or more successfully, than Mr. Ponting. The lecture was delivered with lowered lights and with an accompaniment of lantern slides throughout, and was followed by a few kinematograph films of extraordinary interest. It is impossible to over-praise the beauty of the photographs, nor is it easy to select those of chief scientific interest, though an exquisite series showing new ice at successive stages of formation may be specially mentioned. Of the moving pictures, those of the killer whales were singularly clear, though the motion of creatures of their kind is familiar to many; those which showed seals leaving and entering the water through ice-holes were of even greater interest and value.

Some wonder has been expressed, with the vast area unexplored in the Antarctic region and the many problems awaiting solution in mind, that Scott elected to follow Shackleton's route, or even (and this criticism dates from early Arctic days) that he or anyone else should desire to reach the geographical pole at all. Against this there should be recalled the desire once expressed by a high Antarctic authority, that the south pole should be reached as quickly as possible since, until it should be, explorers would not rest content with work in other directions merely. On this count criticism is scarcely to be directed against Scott's expedition, for it included the largest scientific staff ever taken to the Antarctic, and scientific research certainly played no subordinate part in relation to the journey to the pole. We know already of the devotion with which Scott himself and his lost companions carried their geological specimens to the end of those last dreadful marches. Commander Evans showed how the three weeks during which the ship was held in the pack on the outward voyage were "not wasted," for magnetic observations, soundings, and serial sea temperatures were obtained, while marine biological work of importance was also done. Only the impossibility of finding a suitable base at Cape Crozier prevented the expedition from landing there in order that the embryology of the emperor penguins during winter might be studied. Wilson afterwards made his famous winter expedition thither, and one heard how he recorded the unimaginable temperature of 109° of frost.

Mr. Griffith-Taylor's party, which traversed the Ferrar Glacier, broke new ground, reaching a valley free of snow, containing a fresh-water lake only surface-frozen and full of algæ. Gravels in this limestone region, rich in garnets, "were washed for gold, but only magnetite was found." Commander Evans also paid tribute to Dr. Simpson's work as physicist and meteorologist, which was carried on after his departure by Mr. Wright, who also "made a special