miles of Rudok itself. The news was soon conveyed there, and the Governor, a native of Lhasa, came out to meet me. He brought presents of tea, sheep, and goats, and was most civil, but begged that I would go back, as he would lose his appointment and be disgraced if it became known that he permitted me to advance further. His politeness disarmed opposition, and my orders, given in writing, were not to get into collision with the Tibetans. We drank a good deal of tea, made in their mode churned with butter and salt, which was always simmering in his tent, and I managed to persuade him to let me ascend a conspicuous peak a few miles further on, and from which I obtained a magnificent panorama of the lake-dotted plain to the eastward of Rudok. We parted excellent friends, and I presented him with a single-barrelled pistol, in return for the presents he had given us. I feel sure that had I been able to get back there the following year, I could, starting from other points, have got very much further to the eastward, and returned again *via* Rudok itself. I was, however, sent to another and equally interesting part of the Himalayas.

This country of Rudok is now, in 1890, to be visited, examined, and reported upon by the Russians. Twenty-seven years have gone by since I was on its very threshold. In the interval we have had political officers appointed Residents in Leh, we have seen many journeys made by English officers and English traders to Yarkand, and yet no one has penetrated into Rudok and all that unknown country on the north and north-east which is much nearer. It does not say much for our British energy that a Russian is now to enter this area, and is now perhaps surveying within almost, I may say, a stone's-throw of our own border, which we have made no attempt to get into and know. Perhaps M. Grombchevsky may not succeed, perhaps he may lose his life, but that does not detract from the activity and devotion the Russians are at present giving to the exploration of Central Asia down to the Himalayan chain, or prevent their doing so. If they from their base can do this, why can we not ourselves? We have been content to send in natives of India, but this is not the same thing as sending European officers, for in one case the information obtained is purely topographical, no actual knowledge of physical features is gained, nothing from a military point of view, and no personal acquaintance is made with the people which might be of political or other advantage hereafter. Proceeding to the north-west of Ladak, where the Russians have lately been exploring, it appears extraordinary, with the knowledge the Government of India possessed of the vast system of glaciers of the Mustakh, south of the main range, that no attempt has been made during the past twenty-five years to finish that tract of country, and map the glaciers which descend on the north or Yarkand side, and trace the rivers flowing from them, which would be easy to accomplish, and with little or no danger of interruption. This I consider would be of far more importance and of infinitely greater interest scientifically than spending thousands of rupees on large-scale surveys of Indian hill stations and cantonments, or the resurvey of parts we know well on larger scales.

Although the Indian Survey and the Quarter-Master-General's department have made us acquainted with vast tracts of country, yet much more might have been explored if persistent efforts of every kind, along the line of the Himalayas from Kashmir to Assam had been made during the past thirty years, and if the Government of India had given encouragement to officers who were able to survey and to make the most of their opportunities to do so. I can remember when many such good opportunities have been lost, owing to a contrary policy, for fit men ready to go have not been wanting; also, when such opportunities have been taken, and at a time when the Government would not have given their sanction had it been applied for, as, for instance, when Mr. Johnstone, an uncovenanted assistant of the Kashmir Survey party proceeded to Yarkand alone, and returned in safety in 1864, bringing back a large addition to the then complete blank of intervening country, and fixing with some exactitude the position of the large cities he visited. We thus have left and are leaving to Russian subjects, who have the good wishes and countenance of their Government, to survey tracts of country lying upon our line of frontier, and we shall probably see them the first of European nations to plant their feet in Lhasa. They go to work on the right system, for much more can be done by single individuals in a quiet way, with a few carriers and attendants, than by organizing large unwieldy missions, with a little army of camp-followers and sepoy, such as it was proposed to send from Darjiling some few years ago. Such preparations become mag-

nified into an army with aggressive aims, certain to arouse political difficulties; it is a burden on the resources of the country it has to pass through, and the possibility of misunderstandings and quarrels arising over the collection of and payment for the same.

We might have been working for years past to the northward, in many directions, by small exploring parties, and have now possessed an intimate knowledge of the physical features of the country, and its zoology, fauna, and flora, such as the Russians do in their thorough manner, but which our Government appears not to understand the value of, eminently unscientific as it is. After all, disagreeable though it be to see opportunities lost, those who do appreciate scientific methods of work must thank Russian explorers, such as Prejevalsky, and now Grombchevsky, for the light they have, in the last few years, thrown on the geography and natural history of Central Asia, from Siberia south towards British India. H. H. G-A.

Variability in the Number of Follicles in *Caltha*.

IT is easy to understand, supposing a tendency to variability, that characters of little value (as the colours of certain domesticated animals) might vary considerably, because not kept in check by natural selection. If it does not matter to a species whether it is unicolorous or spotted, for instance, one can see how both varieties may coexist without any tendency to the formation of a new species, and it might be rather an advantage than otherwise that individuals should differ from one another. But those parts connected with so important a function as the reproduction of the species would, one might suppose, be rigidly guarded over by the survival of the fittest, and any great variability in the number of offspring would hardly be expected within the limits of a species.

That such variability exists, however, we have abundant proof. The variability in the number of follicles in the Ranunculaceæ is astonishing. Coulter ("Manual of Botany of Rocky Mountain Region") gives the pods of *Caltha* as from 5 to 12; but this does not nearly represent the amount of variation. *Caltha leptosepala*, DC., is very abundant at West Cliff, Colorado, and this year I examined a number of specimens of the flowers, and counted the follicles, with the following result:—

Follicles.	Specimens.
2	1
3	7
4	4
5	11
6	3
7	11
8	10
9	7
10	4
11	5
12	1
13	5
14	3
15	1
Total	73

It thus appears that 73 flowers presented as many as 14 variations in the number of follicles, and curiously, the odd numbers are more numerous than the even, in the proportion of 47 to 26.

Miss Lowther and Miss Byington, of West Cliff, were good enough to search for variations other than those tabulated above, and they succeeded in finding specimens with 1, 18, 23, and 25 follicles respectively.

T. D. A. COCKERELL.

3 Fairfax Road, Bedford Park, Chiswick, W.,
September 16.

The Origin of Mélinite and Lyddite.

(Picric Acid.)

IN your issue of the 4th inst. (p. 444) there occurs the following sentence:—

"Although picric acid compounds were long since experimented with as explosive agents, it was not until a very serious accident occurred, in 1887, at some works near Manchester, where the dye had been for some time manufactured, that public attention was directed in England to the powerfully explosive nature of this substance itself."

As this sentence forms part of this year's great annual scientific manifesto, with which Presidents of the British Association for the Advancement of Science are wont to favour your readers, I trust your love of scientific precision will help me to point out that, "*prior*" to the very serious accident near Manchester, public attention "*was*" directed in England to the powerfully explosive nature of this substance itself through the medium of a very serious publication in London, or rather through the medium of two very serious publications—viz. a patent and a paper read before the Chemical Society, as you will see from the following statement,¹ which I drew up last spring at the request of and, as I hoped, for the use of my distinguished fellow-inventor, the President of the Government Committee on Explosives, and now President of the British Association for the Advancement of Science. H. SPRENGEL.

54 Denbigh Street, S.W., September 13.

A Recently Established Bird Migration.

BURIED in the heart of a newspaper article of the 4th inst., on incorporated Worthing, is a statement which, if it may be relied on, seems to me of curious, if not unique, interest, inasmuch as it dates very closely what seems now an annual migration of birds. After speaking of West Tarring as dividing with Lancing the title of the capital of English Figland, the journalist (*Daily Telegraph*, September 4) goes on to say, "There it was that Thomas A'Becket planted the first slip—now a mouldering stump—whence, it is said, all these shady alleys, redolent of syrupy sweetness, derive their origin. There is no handsomer shrub-tree than the fig, spreading forth its many-veined, broad leaves in grateful shade, while the fruit, varying from juicy green acorns to great purple bulbs—I bought some yesterday four inches in length—peer boldly forth from every available twig. Even that discriminating bird, the Italian beccafico, has become aware, in some mysterious way, of the existence of the Worthing fig-gardens, and comes over to spend a pleasant six weeks among them, just as we go for change of air to Switzerland or the Black Forest. This is the time for his arrival, and if I may judge by certain well-picked figs on the Tarring trees, I should say that he had taken up his quarters somewhere in the immediate vicinity of the noble thirteenth century church."

We may reasonably allow a century or so from the time of Henry II., before the fig-tree would be sufficiently acclimatized and established at Worthing to attract such visitors. And then, always supposing that it is the Italian beccafico (*Motacilla curruca*, Linn.) which comes, it seems probable that he follows fig-harvest along the Riviera, and up from Southern to Northern France; though how so delicate and toothsome a mouthful manages to run the gauntlet of the continual potting which almost exterminates bird life over great breadths of that long journey is more difficult to understand. And then is it possible that a bold spirit of adventure, rather than any well-grounded certainty of knowledge, led the first comers across the Channel? Because it is a strange fact vouched for by more than one observer, and which goes dead against the old unerring instinct theory, that occasionally in the autumn migration, long streams of our emigrants make boldly out to sea from our westernmost coast where there is no land nearer than the east coast of America, and the whole flight must needs perish.

But as this whole question of bird migration is still one of the most dimly-lighted regions in the whole arcana of natural history, and its beginnings in most cases go far back into immemorial time, I trust—despite the great demands just now of the British Association reports on your valuable space—that you will kindly give some competent ornithologist, resident at, or a visitor to Worthing, the opportunity of confirming, if the fact is so, that the Italian fig-pecker has formed the habit of attending fig ripening there since the time of Thomas A'Becket.

HENRY CECIL.

Bregner, Bournemouth, September 9.

The Common Sole.

MR. CUNNINGHAM, in his valuable "Treatise on the Common Sole," recently published, remarks (p. 125), "Why I have failed to obtain soles in the first year of their growth, after the stage of those found at Mewagissey in May, I cannot understand." It may be of interest to those who are studying this subject to know that, among the investigations organized by the Royal Dublin Society, and intrusted to my care on board the s.s. *Fingal* off

¹ We have not considered it necessary to print this statement.—ED.

the west of Ireland, during the past summer, the working out of the life-history of sea fish took a prominent place.

In August, soles born in February and March were not found in shallow water, though careful search was made for them. Outside 50 fathoms we began to meet them. In 80 fathoms we took them in abundance, and also found them in the stomachs of other fish captured by the trawl in similar depths.

WILLIAM SPOTSWOOD GREEN,
H.M. Inspector of Irish Fisheries.

Dublin Castle, September 22.

A Meteor.

AT about 7.49 p.m. on the 14th inst., I saw from the garden of the Pavilion Hotel, Folkestone, an unusually large and bright meteor descend towards the north-west point of the horizon. The long and full tail left behind, like that of a large rocket, enabled one to trace its path, which at its highest point was about 6° or 8° north of Arcturus. The meteor, which was very much larger apparently than Jupiter, descended very slowly along a slightly wavy line of a mean inclination of about 75° to the horizon. The end of its path was hidden by houses on the "Bayle."

J. PARNELL.

Pavilion Hotel, Folkestone, September 19.

THE WHITE RHINOCEROS.

WRITING of his sporting adventures on the River Se-who-who (a confluent of the Umniati) in Southern Mashuna-land, Mr. F. Selous, in the *Field* of August 16, says as follows:—

"It was within a mile of this spot that, two years previously [*i.e.* in 1883], I shot two white rhinoceroses (*Rhinoceros simus*), the last of their kind that have been killed (and, perhaps, that *ever will be killed*) by an Englishman. They were male and female, and I preserved the skin of the head and the skull of the former for the South African Museum in Cape Town, where they now are. I shall never cease to regret that I did not preserve the entire skeleton for our own splendid Museum of Natural History at South Kensington; but when I shot the animal I made sure I should get finer specimens later on in the season. However, one thing and another prevented my visiting the one spot of the country where I knew that a few were still to be found, and now those few have almost, if not quite all, been killed; and, to the best of my belief, the great white, or square-mouthed, rhinoceros, the largest of modern terrestrial mammals after the elephant, is on the very verge of extinction, and in the next year or two will become absolutely extinct. If in the near future some student of natural history should wish to know what this extinct beast really was like, he will find nothing in all the museums of Europe and America to enlighten him upon the subject but some half-dozen skulls and a goodly number of the anterior horns."

The skin of the head of the male white rhinoceros shot by Mr. Selous on the occasion spoken of above was forwarded by the authorities of the South African Museum to Mr. E. Gerrard, Jun., of Camden Town, to be mounted for their collection. Mr. Gerrard, knowing the rarity of specimens of this animal, was kind enough to allow the mounted head to be exhibited at a meeting of the Zoological Society of London in 1886, along with a corresponding head of the (so-called) black rhinoceros (*R. bicornis*), so that an easy comparison might be made between them.

The differences between the external forms of the heads of the two African rhinoceroses, though not, perhaps, so striking as the well-known differences in their skulls, are sufficiently obvious on comparison. I will venture to point them out in the pages of NATURE, in the hope that the attention of the several exploring parties now traversing Mashuna-land and Matabeli-land may be called to this subject, and that, in case of a straggling