There is also "*whin-axe*," an instrument for extirpating whin from land.

The Scotch form of whin is *quhyn*.

March 16 JOHN JEREMIAH

The Aurora of February 4

THIS Aurora was seen throughout Europe, including Russia and Constantinople, in Egypt, in the Mauritius, and in India.

May not all auroras pervade the atmosphere around the entire globe and be visible wherever night prevails with a sufficiently clear sky? And so may not the southern and northern aurora belong to one and the same universal aurora?

GEORGE GREENWOOD

Alresford, March 16

I SEE notices in the English papers of a great aurora seen in all parts of Scotland, England, and even as far south as Alexandria in Africa. It may be interesting for your readers to know that it was visible here on the same evening—Sunday, February 4. I saw it first at 6.30 P.M., and at various times after that until 10.30, after which I did not look out of doors. There were no streamers, and the peculiarity of the appearance was that it was in all directions, and less in the north than in the west and east. It presented the appearance of a dull red fog, in shifting masses, and more like the haze I observed here in 1861, when the earth was said to have passed through the tail of the comet of that year. Auroras are very rare in this latitude, but we have had four or five displays in fifteen months: one so bright as to excite the alarm of fire, and to call out the fire department.

GEORGE S. BLACKIE

Nashville, Tennessee, U.S., Feb. 27

Barometric Depressions

BY the introduction of parenthetical sentences between words, which do to some extent represent my meaning, though they are not mine, as the inverted commas would imply, and by the omission of the main point of his own argument, Mr. Ley has presented as mine certain propositions which may well appear to him and to every one who reads them, not only irreconcileable, but sheer nonsense. As these parenthetical interpolations are Mr. Ley's own, and as the point in his argument to which I took exception was not the application of Buys Ballot's Law, but his proposition—shortly stated—that revolving storms are caused by heavy rain, I conceive that his version of my views, which may be funny but is certainly incorrect, is scarcely worth the serious attention of any one.

As to the rest, it is a great thing, in any branch of science, to establish points beyond the reach of further argument or doubt. The depression of the barometer in summer over a great part of Asia has hitherto seemed one of the most curious and difficult problems in Physical Geography. We now know all about it. There is no more room for doubt. It is "really due" to the rarefaction of the air. Mr. Ley says so. What, how, why, when, or where, are details far too commonplace for him to enter upon.

The whole subject of barometric changes, and their relation to strong winds or storms, is one of extreme difficulty; and, in the present state of our knowledge, we can do little more than guess at or discuss the probable solution of the many questions that arise out of it. From the off-hand way in which Mr. Ley disposes of them, or wishes them disposed of, it would appear that he has not yet arrived at even an appreciation of their difficulty. This is the real point on which we are at issue; the range of his study has been too confined. A more general application of his industry will, I hope—should he again meet me in my capacity of critic—relieve me of the necessity of making remarks unpleasant for him to read, or for me to write.

J. K. L.

The Meteor of March 4

I HAVE been looking out for some corresponding notice of a meteor seen here on March 4, but hitherto in vain. At first I hoped that the interesting accounts from Ireland, published in the last number of NATURE, might have referred to the same phenomenon; but I soon found that the dates were discordant, and I now beg to forward the following brief notice of the earlier one:—

On the above-mentioned evening, about 7h. 40m. P.M. railway time, a brilliant meteor was noticed by my gardener Thomas Wood. According to his account it appeared about 20° or 30° above the N. horizon as a ball of red fire passing rapidly from W. to E., about one-third as large as the full moon, with a tail seven or eight times its diameter in length, the portion nearest the head being reddish; but changing at about one-third of its length to green, which was especially distinct towards its tapering point. The head seemed to be surrounded by some sparks. It threw such a light upon the ground as to show all the growing wheat in the field through which the spectator was passing. The course was rather descending, and it went out suddenly without coming down to the horizon. I have heard of only one other person in the neighbourhood who saw the light cast by the meteor, and who described it as extremely brilliant. It is singular that it has not been more generally noticed. The especial interest attached to it is the fact that, in common with the one observed only four days later in Ireland, its course was in the unusual direction of the earth's motion.

Hardwick Vicarage, Hay, March 18 T. W. WEBB

THEODOR GOLDSTÜCKER

FOR the following particulars of the career of the late Prof. Goldstücker we are indebted mainly to the *Academy* and *Trübner's Oriental Record*:—

By the death of Theodor Goldstücker, at the early age of fifty-one, philology has lost one of its greatest scholars, and society, what it can still less afford to lose, one of the noblest and most disinterested of men. Born at Königsberg, in Prussia, he began the study of Sanskrit, for the profound knowledge of which he has since become so famous throughout the world, under Prof. Peter von Bohlen, at the University of that town. He continued this study under Profs. August Wilhelm von Schlegel and Christian Lassen at Bonn. He afterwards resided for some time at Paris, where he enjoyed the friendship of men of the greatest distinction, such as Burnouf, Letronne, &c. He then resided at the University of Berlin, where he began soon to display great scholarly activity. Alexander von Humboldt formed already at that time a very high estimate of the capacities of the young scholar, whose aid, in several very difficult questions of Indian philosophy, he gratefully acknowledged in his "Kosmos."

After the reaction of 1848-9, Goldstücker came over to England for the purpose of assisting Prof. Wilson in the preparation of a new edition of his Sanskrit Dictionary. For this new edition no material whatever existed save the dictionary itself in its printed form. Goldstücker, nevertheless, undertook its revision single-handed; and the immense proportions which under his hand the first six parts assumed (480 pp. without getting to the end of the first letter) rendered the completion of the work by one man or in one generation impossible. Many thousands of notes and references for this and other works, the result of an unremitting study of the MSS. treasures at the India House, &c., are left behind; and we are glad to learn from the *Academy* that the report in some of the newspapers that the deceased had left directions in his will for their destruction is without foundation.

The earliest work undertaken by Goldstücker was the translation into German of the "Prabodha Chandrodaya," a theologico-philosophical drama, by Krischna Miçra, to which Professor Rosenkranz wrote a Preface. In 1861 he published, as an Introduction to a Fac-simile Edition of the "Manava-Kalpa-Sutra," an investigation of some literary and chronological questions, which may be settled by a study of Panini's work, under the title of "Panini, his place in Sanskrit literature." Goldstücker also edited the text of the "Jaiminîya-nyâya-mâlâ-vistara," of which work 400 pages in large quarto are in type.

For the last two years he has been engaged in carrying through the press, for the Indian Government, a photo-lithographic edition of the "Mahâbhâshya," of which 300 pages still remain to be done. By his decease, what may be called the "traditional" school of Vedic criticism, which gives to the interpretations of native tradition the preference over those derived from comparative philology, ceases to have a European representative. His manuscript of a Sanskrit grammar has long been finished, and it is hoped that this work, which is likely to revolutionise the teaching of Sanskrit in many respects, may be allowed to see the light. The great psychological value as an educational instrument which he attached to the Sanskrit language, if properly taught, was well known to his friends; and it was through his advocacy that a committee of the professors of University College, London, was appointed to report on the desirableness of making Sanskrit an integral part of all the degree examinations in the University of London.

Of the philosophical literature of India, the "Mîmânsa," from its close connection with grammatical researches, engaged his chief attention; some fruit of his labours in this field is a nearly finished edition, prepared for the Sanskrit Society, of Mâdhava's "Jaiminîya-nyâya-mâlâ-vistara" (1865).

It was however Goldstücker's thorough familiarity with the legal and ceremonial literature of the Hindus which rendered his advice of so much value to the Indian Government. A paper recently published by him "On the Deficiencies in the Present Administration of Hindu Law" (Trübner, 1871), contains an exposure of the frequent failures of justice arising from the misunderstandings of native codes, which disgrace our Indian administration.

Besides some papers in the *Reader* and the *Athenæum*, Goldstücker contributed an excellent essay on the "Mahâbhârata" to the *Westminster Review* in April 1868; and among his papers will be found a copy of the great Eastern epic collated with the best European MSS. His library is, we are glad to hear, to be kept together.

Dr. Goldstücker was Professor of Sanskrit in University College, London, President of the Philological Society, a member of the Council of the Asiatic Society and of the Association of the Friends of India.

REPORT OF THE ASSOCIATION FOR THE IMPROVEMENT OF GEOMETRICAL TEACHING

AT the Second Annual Meeting of this Association, held at University College, London, on January 12, Dr. Hirst, the president of the association, delivered the following address:—

In opening the proceedings of this, the Second Annual Meeting of the Association for the Improvement of Geometrical Teaching, I am glad to be able to congratulate you on the decided progress which has been made during the past year towards the realisation of your views. The discussions recorded in English journals, and the reception given to recently published text-books on geometry, unquestionably indicate that public opinion is far more inclined now than it was a few years ago to entertain the notion of an improved exposition of the elements of geometry. We are no longer warned that to touch that edition of Euclid to which, for more than a century, we have paid such literal homage, would be to ruin the teaching of geometry. On the contrary, it is now generally admitted that, without departing from the admirable exactitude and geometrical purity of Euclid's elements, we ought to be able, by judicious revision and extension, to bring them more into harmony with the scientific methods and the habits of thought of our own day. I alluded last year to the retrograde step that had been taken in Italy on this question of the teaching of geometry. The announcement excited much interest in England, though the true purport of the Italian movement was, I fear, slightly misunderstood. I have, therefore, thought it my duty to procure original documents, to make inquiries into the success of the Italian movement of 1867, and also to ascertain the present aspect of geometrical instruction in that country. I hold in my hand the historically interesting document which was issued by the Italian Government in 1871. It contains instructions and programmes relative to the teaching of mathematics in their *Ginnasi* and *Licei*.* Before quoting it I may observe that the *Ginnasio* is essentially a classical school, mathematics being studied only in its fifth or highest class, and then only for five hours a week; and that in the *Liceo* the instruction is still to a great extent classical, though less exclusively so. Here, as the pupil advances through its three classes, mathematics, physics, natural history, and philosophy become more and more prominent as subjects of study. The instructions, as already observed, relate solely to the teaching of mathematics in these classical schools; nevertheless, the following introductory remarks on the objects of mathematical study are, I venture to think, applicable to all schools in which the foundation of a truly liberal education is to be secured: "Mathematics should not be looked upon as a mere collection of intrinsically useful propositions or theorems of which boys ought to acquire a knowledge in order to be able to apply them subsequently to the practical purposes of life. The study should be regarded principally as a means of intellectual culture, directed towards the development of the faculty of reasoning, and to the strengthening of that just and healthy judgment which serves as the light whereby we distinguish truth from that which has but the semblance thereof."

After describing the course of instruction in arithmetic and algebra best suited to the end in view, the document before me proceeds thus:—"In order to give to the instruction in geometry its maximum intellectual efficacy, and at the same time to bring the subject-matter within reasonable limits, it will suffice to follow, in our schools, the example of English ones by returning to the elements of Euclid, universally admitted to be the most perfect model of geometrical rigour." It would be a grave error to suppose that it was the good results on geometrical teaching of our adherence to the elements of Euclid that induced the Italians to return to them. Although England is made, in some measure, responsible for the step taken, we know from sources alluded to in my address last year that the main object in taking it was to purge from Italian schools the many worthless books which private enterprise had succeeded in introducing, and by no other means than the one adopted could the Italian Government, in the opinion of their advisers, have achieved this end with sufficient promptitude and impartiality.

The real motive of the order issued in 1867 is a little more apparent in the following passage from the Instructions, wherein allusion is made to the practice, then prevalent, of striving after a deceptive facility of treatment by the introduction of algebraical processes in place of geometrical reasoning: "The instruction in geometry is to extend to the first six, and to the eleventh and twelfth, books of Euclid, and to be followed by lessons on the most essential propositions of Archimedes relating to the measure of the circle, of the cylinder, of the cone, and of the sphere. Taught by the method of the ancients, geometry is easier and more attractive than the abstract science of number; hence, instead of postponing geometry to algebra, one part of the subject (the first book) is assigned to the fifth class in the *Ginnasio*, and another (the second and third book) to the first class of the *Liceo*. The teacher is recommended to adhere to the method of

* Instruzione e Programmi, per l'Insegnamento della Matematica nei Ginnasi e nei Licei, approvati con R. Decreto, 10 Ottobre, 1867.