

the red end; at the violet the light was so brilliant as to appear almost white. The only clouds at the time were bars of white cirri, and it was across some of these that the halo showed itself. This lasted for eight minutes, and then began to fade as the cirri moved away, but the colours again brightened, and were still visible, even when the sky was apparently clear, although, where the patch of colour remained, very faint cirri could still be perceived behind and through the brightness. At 9.51 the whole had disappeared. The wind at the time was nearly due north. I should like to know whether these solar halos are considered to be produced by ice-crystals in the higher regions. They appear to me quite as prevalent in summer as in winter.

Great Malvern, October 2

E. BROWN

#### A Remarkable Rainbow

THE phenomenon of supernumerary bows noticed by "L. C." on September 24, has been repeatedly observed and described. Various explanations have been suggested; and "L. C." will probably find what he wants in Archdeacon Pratt's paper in *Phil. Mag.*, 4th series, vol. v. pp. 78-86 (1853).

A. RAMSAY

#### Meteor

A SPLENDID meteor was seen yesterday (Saturday) evening at about nine o'clock. It passed from the north-east, beneath the Pole star, to the west, where it vanished instantaneously without bursting. The nucleus measured, I should say, at least 5' of arc in breadth, and was extremely brilliant.

A. TAUN

31, Mornington Road, N. W., October 7

#### A Palæolithic Flake

It may interest some of your readers to know that I found last week a Palæolithic flake in some gravel at Gray's Inn Lane, where they are now making excavations for sewers. It is a somewhat large, flattish, subtriangular flake of implement-like form, exhibiting a large cone on the plain side towards the butt, and the other side showing several facets; ochreous all over, and somewhat abraded. There is one in the British Museum from this spot, only it is an *implement*, black, lustrous, and spear-shaped, and seems to have come from a higher stratum than the flake before mentioned. Mr. W. G. Smith has an implement from Drury Lane—brought to him by an excavator instructed by him to look for implements at Shacklewell, and while at work at Drury Lane he found one, and, recognising it as an implement, brought it to Mr. Smith. It is subtriangular, worked all over on both sides, blackish indigo, lustrous, and very slightly abraded. These are as yet the only relics of Palæolithic man recorded as found in Central London.

49, Beech Street, E. C.

G. F. LAWRENCE

#### Hop "Condition"

I OBSERVE that it is asserted in a German technical journal that the golden microscopic dust on hops, which English growers call "condition," and in which the finest properties of the hop are supposed to reside, does *not* increase in quantity, as generally it is supposed to do, with the growth of the inflorescence. The quantity on the plants is declared to be as great when the buds are first developed as at maturity. Can any of your readers oblige me with observations or references in point?

H. M. C.

#### JOACHIM BARRANDE

THE announcement that Barrande has passed away will be received with sincere regret in every quarter of the globe where geology is cultivated. His death severs another of the few remaining links that connect the present generation of workers with the early pioneers of geological science. Born in 1800, he was eventually appointed tutor to the young Duc de Bordeaux. So attached did he become to the royal family of France, that when Charles X. abdicated he voluntarily went into exile, accompanying his young pupil to Prague, which remained

his domicile thenceforward to the end of his long life. It was during the early years of his exile that he gave himself to natural history pursuits. In a brief visit to Vienna he came upon a copy of Murchison's "Silurian System," then recently published, and finding some of the fossils therein figured to resemble others which he had himself picked up in Bohemia, he on his return began to look more attentively at the rocks of his neighbourhood. Getting more interested with every fresh excursion, he began to open quarries and employ workmen to search for fossils. In order the more easily to direct their work he laboriously acquired their language. Year after year he continued these researches, devoting to them his time, energy, and fortune. He became the prince of fossil collectors. But at the same time he applied himself with unwearied industry to the scientific study of the fossils and of the rocks containing them. By degrees his labours took shape, and there resulted from them his colossal work, the "Système Silurien de la Bohême," a noble monument of scientific enthusiasm. It was begun as far back as 1852. Since that time no fewer than twenty-two massive quarto volumes of text and plates have been published. Undeterred by the remonstrances of a publisher who would insist on counting the cost and the sale, Barrande was his own publisher, and prosecuted his labour of love down to the end of his life. His numerous separate papers on geological subjects began to appear in 1846, and have been continued to the present time. Living in exile for upwards of half a century, Barrande occasionally visited his native country, and took a keen interest in scientific progress there, but remained an unflinching royalist, refusing to do anything or accept any distinction which might seem to compromise his political principles. He even declined to be nominated a corresponding member of the French Academy. But honours were heaped upon him by the scientific societies of other countries. Due tribute will no doubt be paid to his scientific achievements; for the present we have time only to offer these few lines to the memory of one of the most unwearied and profound students of palæontology, and one of the most upright and honourable of men.

#### THE SANITARY CONGRESS ON HOUSE SANITATION

A CONSIDERABLE amount of attention was given at the recent Congress of the Sanitary Institute in Glasgow to the question of house construction, and to the evils which are attendant upon the present system under which human habitations are erected both in the metropolis and elsewhere. When it is remembered how large a portion of time the inhabitants of this country are compelled, by reason of climate and otherwise, to spend inside their dwelling houses, it is obvious that the health both of the present and of future generations must be largely dependent on the sanitary condition of those dwellings, and that very earnest consideration should be given, both by experts in matters of building and also by the public themselves, to the sanitary details of house accommodation. And yet it is notorious that houses, which are faulty in almost every particular relating to health, are week by week being run up by hundreds and thousands; that even where money does not enter into consideration the dwelling-rooms of mansions are left without any provision for ventilation whatever; and that both the wealthy and the poor are stricken with disease by reason of the foul air which has been conveyed from the sewers into their homes as the result of arrangements which are, in point of fact, almost always more costly than should have been the more simple appliances which would have prevented the possibility of such an occurrence.

As the law now stands there are certain evils which

cannot be controlled either by any existing statute or under by-laws. Thus, whereas a reasonable width of street may be secured by means of a by-law, there is absolutely no provision to prevent the erection of houses of such a height as effectually to exclude sunlight, and so it comes to pass that windows open, not on to bright, dry, open spaces, but into comparatively narrow thoroughfares which tend to remain damp and imperfectly lighted. Prof. Tyndall's experiments as to the arrestation of infusorial life by solar light should alone suffice to secure for the spaces about our dwellings ample exposure to the rays of the sun, for he has clearly shown that, after infecting certain sterilised infusions and exposing one set where no sun could reach them and another set to the influence of the sun, infusorial life was much more rapidly developed in the former than in the latter; and this notwithstanding the fact that the temperature of the flasks exposed to solar influence was far more favourable to the development of low forms of life than was the case as regards the others. It has also been decided by the law officers of the Crown that the height of rooms cannot be regulated either under any general statute or by means of a by-law. As to this, however, we note that Mr. John Honeyman, a well-known architect, strongly advocated at the Congress the desirability of low ceilings in small houses, alleging that such an arrangement, by inducing economy in construction, facilities for warming, and other incidental advantages, would tend to prevent overcrowding and also add to the comfort of the lower classes. There can be no question that wherever the height of a room is such that the upper portion becomes a mere reservoir for overheated, stagnant, and vitiated air, and whenever adequacy of floor space per head of the occupants is sacrificed on account of an increased cubic space resulting from a high ceiling, then distinct harm results from the loftiness of the apartment; but, due regard being paid to ventilation by means of windows opening nearly up to the ceiling level and other contrivances, a reasonably high apartment has distinct advantages over many of the low ones which are now constructed.

Turning, however, to matters which are well within the control of sanitary authorities, the members of the Congress were unanimous in condemning the present system by which dwelling-houses are now constructed. Thus, instead of covering the ground surface of the sites of new houses with concrete so as to prevent both moisture and effluvia from any neighbouring leaky drain from ascending into the dwelling, the builders round about London and elsewhere either put their brick foundations directly on to the clay or other soil, or else they provide a material which can only be regarded as a make-shift in so far as imperviousness is concerned, and even this is only placed immediately beneath the house walls. Then again, pieces of tarred felt are inserted in the place of adequate damp courses, and so it comes to pass that, within a few months of occupation, the residents are, apart from other evils, exposed to one of the principal predisposing, if not exciting, causes of phthisis. As for drainage, this work can, as soon as completed, be hidden out of sight, and it is notorious how much illness has resulted, and how many lives have been sacrificed, to the want on the part of builders of the most elementary knowledge in connection with the construction and adequate ventilation of house drains.

In dealing with these and other allied subjects, the several speakers paid a tribute of praise to the Model By-laws which have been issued by the Local Government Board, and which in their annotated form fully explain, by means of diagrams and otherwise, how all the various health and other requirements may be most effectually provided. But even where such by-laws have been adopted, we fear they are in many instances not enforced; and evidence was given at the Congress to the

effect that the principal offenders are themselves often members of the authorities whose duty it is to see the several provisions carried out. As long as this is the case, subordinate officers can hardly be expected to perform their duties efficiently, and the principal remedies needed are, firstly, by means of congresses, lectures to working men, and such measures, to spread broadcast, and in an easily acquired form, a knowledge as to the elements of house sanitation; and, secondly, a determination on the part of the public to elect as members of local authorities only those who have such knowledge and who will use it for the public benefit.

### THE ASTRONOMISCHE GESELLSCHAFT

[FROM OUR VIENNA CORRESPONDENT]

THE meeting of the *Astronomische Gesellschaft* was held this year on September 14, 15, and 16, in the Academy of Sciences in Vienna. There was a good attendance, and among others present we observed the astronomers Auwers of Berlin, Gould of Cordoba, Pickering of Cambridge, U.S., Elkin of the Cape, Lœwy and Janssen of Paris, Foli of Liège, Gylden of Stockholm, Engstroem of Lund, Oudemans of Utrecht, Foerster of Berlin, Vogel of Potsdam, Gautier, sen. and jun., of Geneva, Thiele and Pechule of Copenhagen, Wagner, Hasselberg, and Dubiago of Pulkova, Bruhns of Leipzig, Wolf and Schönfeld of Bonn, Gruy of Besançon. England was represented by Prof. G. Forbes. The head of the Ministry of Public Instruction in Austria, Dr. Siedler, having welcomed the assembly in the name of the Government, the president, Prof. A. Auwers, briefly addressed the Congress. For the second time, he said, the Congress held its sittings in those halls. The first time they met there they found in this building the old observatory. They now beheld an institution which in magnificence was hardly matched by any other institution in the world and surpassed by none. The President then thanked the Government for their friendly welcome, and the assembly for the large attendance present. The subjects which were the order of the day were then taken up. From the report of President Auwers on the great zone undertaking, it appeared that the observations of all the observatories in connection therewith might be deemed completed, so that next year they would be in a position to enter on the printing of the official catalogue. It was further shown that the preparations for extending this enterprise to the south as far as 23° or thereabout, southern declination, an object which for several years had been in contemplation, were so far advanced that the scheme might now be considered as secured. In the course of the three sittings of the Society a large number of interesting addresses were given and demonstrations made, most of them followed by lively discussions.

Prof. Bruhns spoke on astronomical refractions, and on the formulæ according to which from the observed refraction the law of reduction of temperature in the atmosphere might be determined. Gylden referred to investigations he had made on the subject of the perturbation theory of planets, and to the labours of the Stockholm Observatory towards drawing up tables of planets in accordance with his theory. Prof. Weiss (Vienna) produced the two printed volumes of the annals of the Vienna Observatory, as also the first sheets of his new edition of "The Wonders of the Heavens" by Littrow, and showed drawings of Jupiter and Saturn, executed by help of the 27-inch instrument of the Vienna Observatory, together with drawings of lunar maculæ taken by means of the 12-inch instrument of the same observatory. Photographs of the sun's corona taken in full daylight, sent by Dr. Huggins and laid before the meeting by