

Milky Way, is not obvious, as I am not aware of the existence of any fable bearing on the point.

D. SILVAN EVANS

IN reply to Mr. Reeks, I was quite correct in stating that the wind would blow in the course of the Milky Way; and to be sure of it, I have communicated with my friend at Llangadock, who has repeated what I have previously stated. He also tells me that on Sunday night (the 11th inst.) he looked out and found the "wind blowing from the east, and the Milky Way was to be seen coming from the north-east." He still thinks it possible to predict the weather by this kind of observation. However, apart from this, the Welsh word is sufficient to prove the correctness of my former letter, which means the "Road of the Wind."

Dec. 13

JOHN JEREMIAH

Meteoric Shower

I OBSERVED a most beautiful star-shower on the night of the 5th inst., at about a quarter to nine o'clock. It crossed the "tail" of Ursa Major in a direction almost easterly, and slanting towards the earth at about an angle of 30°. At first the phenomenon resembled the flight of a flock of wild geese, but after a little the nearer stars inclined towards the earth more than those farthest away, so that in all I could see about thirty stars. I write to you as the period of recorded star-showers mentioned in Prof. Ansted's Physical Geography, is from Dec. 6th to 13th, and I observed this star-shower on the 5th December.

The Commons, Killybegs, Dec. 14

JOHN C. WARD

Hereditary Deformities

THE articles upon this subject in NATURE, Sept. 8, Oct. 20, and Nov. 3, remind me of what I learned fifteen years ago while visiting tribes of Sioux Indians, assembled to the number of 5,000, near the mouth of the Yellow Medicine River, in Minnesota. The Indians were collected at this point for the purpose of receiving their annuities from the U.S. Government, and were accompanied by their families. It is customary for the squaws of their tribes to have tattooed upon the prominences of their cheek-bones small discs, of from one-eighth to one-fourth of an inch in diameter. I was informed by a physician, who has passed much of his time with these tribes, that sometimes a child was born with these marks. This was confirmed by the U.S. Government Indian Agent. I had no means of verifying these statements; they were believed by my informants, who were gentlemen of veracity.

CHAS. M. WETHERILL

Lehigh University, Nov. 19

Right-handedness

CANON KINGSLEY is a close observer of nature, and if his generalisation be correct in the following instance, it would seem that the tendency to develop the right arm to the comparative neglect of the left is not confined to man. In describing the call-crabs of Montserrat, he says that one of the claw-arms, generally the left, is dwindled to a mere nothing, and is not seen, while the other is disproportionately large. I am well aware that the claws of lobsters are seldom equal in size, but have had no opportunity of ascertaining whether it is the right or the left claw which is superior, nor whether there is any rule in the matter.

C. J. R.

Sun Stroke

IN the *Revue des deux Mondes* for the 15th August (page 854), there is a remark which, though somewhat exaggerated, is of very great value and practical significance. The writer says, "The phenomenon known as 'Sunstroke' is due to the action of light, and not, as is generally believed, to the elevation of temperature." An exception has to be made in cases where the sun playing, especially on the back of the head and neck, produces unmistakable sunstroke. Every surgeon practising in the East also meets instances of "solar apoplexy," which present themselves as often as not during the night, but only in the excessively hot weather. However, I know from personal experience that it is quite possible to lay oneself up completely with intense headache, constant nausea, cold extremities, &c., by exposing the

eyes only to the glare of the sun, the head and neck being completely sheltered by a helmet and *puggree*, and the body being at rest in a carriage. Further, I have found it possible, when accidentally obliged to expose myself, to avoid all inconvenience by merely wearing deeply-smoked glasses, my head being guarded only by an ordinary felt hat. But this is an experiment not to be tried rashly. The conclusion obviously is that whenever there is an intense glare, whether attended by intense heat or not, the first condition to fulfil is to shelter the eyes. As the retina is in truth an expansion of the brain, the brain is more accessible to external influences through the eyes than through any other avenue.

R. A. JAMIESON

Shanghai, Oct. 24

GLYCERINE EXTRACTS OF PEPSIN AND OTHER FERMENTS

A SHORT time ago Von Wittich published in *Pflüger's Archiv* some interesting results of an attempt to isolate, by means of concentrated glycerine, pepsin and other so-called ferments found in animal and vegetable bodies.

The mucous membrane of a pig's stomach, washed and freed as much as possible from water, was finely minced and bruised, and then covered with pure glycerine. After standing twenty-four hours, a few drops of the glycerine, diluted with acidulated water, digested fibrin with remarkable rapidity. After pouring off the whole of the glycerine, a second, third, and even fourth glycerine extract could be made, all manifesting strong peptic powers. On treating, after filtration, these glycerine extracts with a large excess of alcohol, a slight precipitate was obtained, which, separated by filtration and re-dissolved in acidulated water, though giving only the faintest proteid reaction, was strongly peptic.

In a similar manner salivary gland and pancreas gave up to glycerine an amylolytic or starch-converting ferment, almost entirely free from proteids, and a "laden" pancreas also gave up a ferment capable of digesting fibrin in an alkaline medium. Barley (*not germinated*) gave up to glycerine a non-proteid diastase; and almonds a ferment capable of acting on amygdalin.

I have repeated many of Von Wittich's experiments with almost entirely similar results. We certainly have in glycerine a new means of working out the intricate problems of these so-called ferments. The glycerine extracts, for the most part at least, seem to remain unchanged for a very long period, so that a stock of ferment can always be kept in store. On the other hand, tissues may, by repeated extraction with glycerine, be exhausted of their ferment, and yet little, if any, otherwise changed, so that they can be examined under conditions hitherto impossible.

Not the least value of the new method lies on the practical side. The means hitherto adopted of preparing the so-called pepsin for medical purposes are confessedly clumsy and inefficient. By glycerine we can now extract, without any trouble whatever, a pure palatable peptic liquid, one which apparently will last any length of time. It is, moreover, to be depended on for its peptic powers; any one who has fairly tested by actual experiment the various "pepsines" of commerce, will understand the value of this remark.

M. FOSTER

NITRO-GLYCERINE AND GUN-COTTON

IT may be of some interest at the present moment to give a brief summary of certain comparative experiments undertaken with nitro-glycerine and gun-cotton, with a view to ascertain their respective destructive nature and safety of employment as industrial or warlike agents. As it is occasionally inconvenient to employ a material of this kind in the form of a liquid, a modification of nitro-

glycerine, known as dynamite, and which is simply powdered glass or sand saturated with the explosive, was applied in the experiments; the force of the dynamite very nearly equals that of nitro-glycerine, and is of course much more readily handled than the liquid explosive itself. Nitro-glycerine or its compounds are the only agents of this nature that can compete in any way with gun-cotton, either as regards its igniting force or cost of production; and for this reason the experiments with these two materials have been watched with particular interest by military men, and have indeed formed the subject of a special report recently submitted to Government by the Committee on Explosives.

The explosive force of detonated dynamite and the Abel gun-cotton, as the compressed or pulped form of this material is termed, was considered to be about equal, and on this account the investigation was more particularly confined to the methods of ignition of the two substances. Professor Abel had already shown, in his communication to the Royal Society, that gun-cotton detonated only under certain conditions and but by the instrumentality of particular agents. And here it should be borne in mind that there exists a very great difference between the detonation and inflammation of gun-cotton. A block of the compressed material, for instance, may be set fire to in an ordinary room without the semblance of danger, the cotton burning vigorously and rapidly, it is true, but without any approach to explosion; ignited, however, by means of a small quantity of fulminate of mercury or fulminate of silver, the explosion is of the most violent description. The fulminates above-named are the only ones found to bring about the ignition of gun-cotton in this truly terrible manner; iodide of nitrogen fails to have any effect thereon, and chloride of nitrogen is occasionally successful in doing so, provided it is employed as a primer in sufficient quantity. While, however, gun-cotton is thus very difficult of detonation, except by the use of special means, nitro-glycerine, or dynamite, readily detonates under ordinary circumstances. That is to say, not only do the fulminates above-mentioned secure its ignition, but percussion-cap and other compositions, as also a sharp concussion, inevitably bring about its combustion.

An interesting experiment will indeed show at once the marked difference between the two explosives. Two wooden boxes were filled with compressed gun-cotton and dynamite respectively, and placed in a suitable position at a rifle range, where they could be hit with certainty by small arms. A bullet was fired at each box, and the results were very conclusive; the dynamite detonated in a terrible manner at the shock, while the gun-cotton was merely inflamed, and burned in a rapid but steady manner.

It was further found that in order to secure certain and perfect detonation, it was always necessary to employ a much larger and more powerful detonating fuze (one containing a large amount of fulminate) for the explosion of gun-cotton than was required for nitro-glycerine, proving beyond doubt, therefore, that the latter is much more readily ignited than the fibrous material. This is of course a great safeguard, and added to the fact that under many circumstances of accidental ignition gun-cotton inflames harmlessly and does not detonate, speaks much in favour of pyroxiline. Indeed the use of nitro-glycerine can, according to our best authorities, be applied only within very narrow limits, as, for instance, for blasting and mining purposes, and its employment even in this sphere necessitates very careful supervision.

From this it will be at once seen that the recent prognostications of several of our war correspondents that the Prussians intend to employ dynamite shells in the bombardment of Paris must be entirely without foundation, for, according to the results obtained by the Explosive Committee in this country, the discharge of a nitro-glycerine shell from a gun would be of itself sufficient to bring about the immediate bursting of the arm itself.

ASSOCIATION FOR THE REFORM OF GEOMETRICAL TEACHING

THE following circular has just been issued:—"For some time past an effort has been made to improve the teaching of Geometry in English schools. The undersigned—all mathematical teachers—are of opinion that good would result from the formation of an Association for the Reform of Geometrical Teaching, and are desirous to elicit the opinion of others who may be interested in the movement. The objects of such an Association would be—1. To collect and distribute information as to the prevailing methods of instruction in geometry practised in this and other countries, and to ascertain whether the desire for change is general. 2. To use its influence to induce examining bodies to frame their questions in geometry without reference to any particular text-book. 3. To stamp with its approval some text-book already published, or to bring out a new one under its own auspices. Should you be willing to become a member of such an Association, you are requested to send your name and address, with a small subscription to meet the necessary expenses of printing advertising, &c., to Mr. Levett, King Edward's School, Birmingham. (Signed) Rawdon Levett, M.A., Senior Mathematical Master, King Edward's School, Birmingham; E. F. M. MacCarthy, M.A., Second Master, presiding over the Modern Department, King Edward's School, Birmingham; J. M. Wilson, M.A., late Fellow of St. John's, Cambridge, Mathematical Master of Rugby School; Robert Tucker, M.A., late Scholar of St. John's College, Cambridge, Hon. Sec. London Mathematical Society, and Mathematical Master, University College School."

A Conference is intended to be held on the 17th of January, 1871, at 2.30 P.M., in the Mathematical Theatre, University College, London, Dr. Hirst in the chair, for the following purposes:—The Association will first be organised. The following resolutions will then be proposed: 1. "That the main object of this Association is to induce all conductors of examinations, at which pupils who have been trained under different systems present themselves, to frame their questions independently of any particular text-book; and that with a view to this object, the members present at this meeting do pledge themselves to use every effort to increase the numbers and extend the influence of the Association." 2. "That with a further view of extending the influence of the Association, local secretaries be appointed for different parts of the kingdom, whose office it shall be to collect information, to make the objects of the Association more generally known in their immediate neighbourhood, and to communicate on all matters of interest with the Central Committee." 3. "That the local secretaries, *ipso facto*, be members of the committee of management." 4. "That all members of the Association shall collect information with regard to text-books and methods of teaching geometry in England and other countries, and that such information shall be forwarded to any secretary or local secretary of the association." 5. "That the committee of management shall, from time to time, print and circulate among others such information as they may consider valuable." 6. "That this meeting is of opinion that in any new text-book—(a) the following principles, only partially or not at all recognised by Euclid, should be adopted:—(i) hypothetical constructions, (ii) the arithmetical definition of proportion, (iii) superposition, (iv) the conception of a moving point, and of a revolving line; (b) the following limitations should be removed:—(i) The restriction of the number of axioms to those only which admit of no proof, (ii) The restriction which excludes all angles not less than two right angles; (c) modern terms, such as locus, projection, &c., should be introduced. These points will be voted upon in detail.