

line joining any two particles of air shall always be parallel to its original direction, an assumption which is manifestly incorrect. If I rightly understand the description of Mr. Wilson's integrator on p. 467, the trace given by it is precisely that which has just been shown in the case of my own machine to be based on a fallacious assumption. But though the trace may be useless, the summation of the movements of the table above described gives results which are representative of physical realities, being in fact the quadrantal components of the wind-movement at the station during the period dealt with by the machine. I trust that the preceding remarks will suffice to justify the statements contained in my last letter. Dr. von Oettingen's remark, referred to in my concluding sentence, related, not to his wind-component-integrator, but to the continual change of form in what may be called the *physical Lambert's line*, and implied the consequent advisability of discarding Lambert's method of treatment.

CHARLES E. BURTON

38, Barclay Road, Walham Green, S.W., October 14

P.S.—On September 21 last I forwarded to Prof. Stokes a description, with drawings, of two forms of wind-component integrator, suitable either for attachment to a cup and vane-anemometer, or for the reduction of existing anemograms of the pattern adopted by the Meteorological Office; and of simpler mechanism than my earlier machine, or Dr. von Oettingen's.

Calabar Bean as a Preservative

AS many find such a difficulty in preserving entomological and other natural history specimens it may not be uninteresting to your readers to have a brief note on the use of Calabar Bean as a preservative. About eight years ago, when Aquilla Smith, M.D., Professor of Materia Medica, Trinity College, Dublin, was showing me through the museum that he has rendered so famous, I was struck by the perfect manner in which the specimens were preserved; the little brown beetle that is generally such a pest in similar collections being entirely absent. Dr. Smith told me that he treated the specimens with tincture of Calabar Bean, and very kindly gave me a bottle of the tincture. I used the tincture freely in my cabinet of Lepidoptera, and, although the collection has been woefully neglected since, it has remained quite free from mites. Dr. Smith tells me that the tincture was prepared by Mr. Squire of 277, Oxford Street, London, its strength being one part of the bean to eight of (rectified?) spirit. I might mention that Mr. Fetherstonhaugh used some of the tincture which I gave him in his cabinet, and was delighted with its action. A drop of the tincture is placed on the body of the insect. I found it a good plan to do this whilst the insect was on the drying board, as otherwise, in newly set insects, the damping with spirit caused the wings to spring.

E. MACDOWEL COSGRAVE

A Correction

I FIND that the term "glissette" is not used precisely in the sense which I had supposed. A reference to Mr. Besant's "Notes on Roulettes and Glissettes" (which I had not before me last week) shows that the envelopes of the moving lines, to which the theorem in my last letter refers, would be properly described as *roulettes*. It is obvious, however, that glissettes are in general also *roulettes*.

GEORGE M. MINCHIN

Royal Indian Engineering College.

Effect of Green in Painted Windows

I NOTICED to-day a curious effect in the east windows of Old Upton Church which may interest artists among your readers, and of which I should be glad to see any explanation. The pattern is in small regular pieces in which a strong red is prevalent, especially in the ribbon round the edge. Green is perhaps the least represented in area. At all events, generally, red largely prevails over green. The latter is not over brilliant. At a distance of ten feet the general effect is red. At that distance I see the pattern sharply, and green is not at all obtrusive. At the length of the church, say fifty feet off, I cannot distinguish the pattern, and the whole window looks a thin watery green haze; the bright red margin is inappreciable.

Richmond, October 12

W. J. HERSCHTEL

THE AUTUMN MEETING OF THE IRON AND STEEL INSTITUTE

AT the meeting of the above Institution, which has just taken place, several papers of scientific and practical interest were read and discussed. They may be broadly divided into two classes, viz. 1st, those relating to the production of iron and steel, from the ore, and the qualities of the material when produced; and 2nd, the various applications to which steel has been put in recent times. The latter class of papers, at the recent meeting, dealt principally with the use of steel in the manufacture of ordnance, small arms, projectiles, and gun-carriages, and the papers, some of which were of great interest, will be reserved for consideration in a separate notice. Amongst the papers dealing with the manufacture of steel we may notice specially a memoir by Herr Paul Kupelweiser of Witkowitz, in Austria, on recent progress attained in the use of the basic process at the works with which he is connected. This process, which has been frequently referred to in NATURE, seems—probably on account of the quality of the ores met with—to have been adopted more frequently in Continental steel works than in our own country, for according to Herr Kupelweiser's summary, no less than thirty works in France, Belgium, Germany, Austria, and Russia, have acquired licences under the Thomas patents, the greater number of these being already at work; while the remainder are adapting their old plant, or erecting new works with the view to its immediate introduction. The weak point of the process hitherto has undoubtedly been the want of durability in the refractory linings of the converters, and on this point the author states that, in spite of numerous trials with other materials, the works with which he is acquainted still use the materials originally proposed by Mr. Thomas, viz. either the basic bricks or the shrunk lime and tar mixture. At Witkowitz, however, a new material has been used containing a comparatively small percentage of silica, and the quality of the bricks manufactured from this has been found to be materially improved. Ground brick mixed with 5 to 10 per cent. of tar is also used at many works for lining as well as for repairs. Basic tuyères have been tried in many places, but are not commonly used; but the author states that magnesia obtained by precipitation from chloride of magnesia by milk of lime appears, from experiments made on a small scale, to be a promising material for making tuyères. As regards the quality of the steel he makes the following remarkable statement:—"The basic process, as regards the quality of its products, is not only completely equal to the acid process, but even, in my opinion, superior to the latter." As a specimen of the excellent quality of the mild steel manufactured at Witkowitz the author exhibited a locomotive boiler tube made of this material, which had been expanded cold by means of a tube expander from 9 to 17 millimetres, on an original diameter of 48 millimetres, equal to an extension of from 20 to 36 per cent. on the periphery of the material, without even splitting at the line of weld.

Another paper of great interest to foreign manufacturers was Prof. Tünner's memoir "On the Use of Lignite or Brown Coal in the Blast Furnace." It is well known that the Austro-Hungarian Empire contains immense deposits of this fuel. It would be difficult to over-estimate the benefit which would accrue to the iron industry of Austria if this abundant and inexpensive fuel could be used successfully in the blast-furnace. All the experiments made in this direction till last year were of a more or less isolated and unsatisfactory character. In June, 1880, however, the "Mining and Metallurgical Association of Styria and Carinthia" appointed a committee to investigate the subject afresh. This committee has not yet reported, or indeed concluded its labours, but it is satisfactory to learn that it is fully acknowledged that there is no theoretical difficulty in the way of smelting