

experimental philosopher he ought to rejoice at the possibility of having two rival systems put to the test in two neighbouring counties. Prof. Smithells's reference to the momentum acquired by the Victoria University is not a happy one, as he ought to know that if a moving body separates under the action of internal forces, momentum is conserved, while kinetic energy is increased.

As regards the concluding sentence of his letter, it seems to me that while advocating public inquiry by Royal Commission he deplores public discussion before the only tribunal which is competent to deal with this question. It is to men who have had practical experience of university teaching, or who by helping to advance knowledge have acquired a right to speak with authority on the organisation of a teaching university, that I addressed myself in writing to you on the subject.

ARTHUR SCHUSTER.

Science and the London Matriculation Examination.

THE late June matriculation examination of the University of London being the last general examination for all candidates under the old regulations, it may be worth while to note one or two things revealed by it.

(1) Out of just under 3000 candidates, fifteen only gained a place in the honours division, but none of these were from what we should recognise (in the accepted parlance) as "public schools," and no female name appears in that division.

(2) The great public schools are represented only by Harrow, Westminster and Shrewsbury (with five names between them); and if we extend the connotation of the term "public school" to include such schools as the great day-schools of the metropolis, such semi-day-schools as Dulwich and Highgate and such public schools of the second rank as Felsted, Repton and Epsom, we can only (with a liberal interpretation of the term) accredit them with somewhat less than sixty names in the whole list. More exactly, the number one counts is fifty-seven, of whom only four represent an "optional science," the remaining fifty-three having offered an "optional language."

These facts seem to represent a poor return for all the talk we have heard of late in connection with scientific education. The fair inferences from them seem to be, (1) that the teaching of languages is immensely stronger in this country than the teaching of science; (2) that the University of London as yet scarcely touches the education of the country as represented by the great public schools of England; (3) that, so far as the public schools generally are concerned, science is regarded still as a *παρεργον* (with the exception of Epsom, and to a less extent the City of London School, St. Paul's School and Clifton College). In some cases, perhaps, it may be inefficiently taught, but in many more it is handicapped by the biased autocracy of the classical headmaster. Gentlemen of that type even with the best intentions lack real sympathy; and the responsibility for the results (little short of disastrous) must ultimately rest with the governing bodies of the great schools of the country. While this condition of things remains, can we wonder at the dearth of brain-power exhibited by our officers as a body in the late war, or at that development of mere loquacity which so often characterises the utterances of our public men and puts the thinker entirely into the shade? One is inclined to ask the question whether present attempts at educational legislation are likely to prove other than abortive when our legislators for the most part need to be educated to a true appreciation of science, its nature, its aims and its methods.

A. IRVING.

Bishop's Stortford, July 21.

The Recent Fireball.

THE very brilliant meteor which made its appearance at about 10h. 30m. on Sunday night, July 13, is on record, so far as is known at present (July 26), as having been seen from 106 places. A large proportion of these are in the counties of Middlesex, Surrey, Kent and Essex, while isolated accounts come from as far away as Devon, Wales, Lancashire, Lincolnshire and Norfolk. Many reports of the phenomenon give no details whatever; very few give trustworthy data concerning its path in the heavens. The meteor was fortunately seen by Mr. Denning at Bristol, and from descriptions by him and a few other observers who carefully noted the position of the meteor its approximate real path in the air has been computed. At its first appearance the object seems to have been at an elevation of 86½ miles, the place of its final extinction being 52½ miles over the Straits of Dover. The course of 45 miles was over a line 11 miles to the west of one joining St. Omer and

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Cape Gris Nez. The fireball must have presented a splendid sight to the inhabitants of the district of France over which it passed, and it is greatly to be hoped that some descriptions will be available from there in order that the above result may be confirmed or corrected.

The radiant-point was probably at $316^{\circ} + 30^{\circ}$, which, though a well-known shower-centre in July, does not seem to have provided such a similarly brilliant member during recent years.

The features of the fireball may be gathered from an inspection of some of the descriptions. The brightness was at least as great as that of the moon, this great light being due to the bursting of the meteor, which then gradually faded. A serpentine streak was afterwards visible, fading away in turn. Some portions of this were traced by some observers for a few minutes afterwards. The duration of flight was variously estimated. If an average of two seconds be taken, as seems permissible, the speed would be $22\frac{1}{2}$ miles per second.

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Sunspots and Wind.

THE Greenwich tables of wind direction contain much, I think, that is suggestive of sunspot influence. Take, e.g., the days of northerly wind in the first quarter of the year (according to the classification N., E., S., W.).

Curve A shows how their number has varied since 1841. In B, each year-point represents an average of five values (on an enlarged scale). D is a curve for the whole year, similarly obtained. C is the inverted sunspot curve.

(It should be stated that the values prior to 1860 err a little by defect, owing to the manner of dealing with calms, in the earlier table used.)

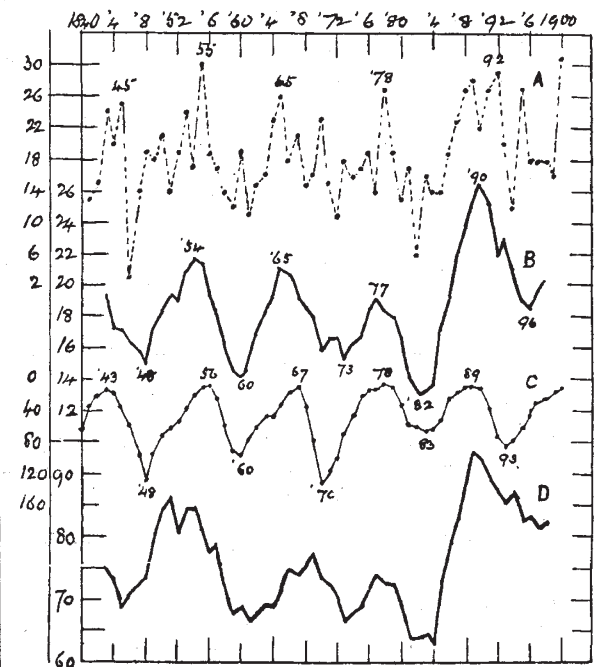


FIG. 1.—A. Days of northerly wind (Greenwich) in first quarter of year (actual variations). B. Result of smoothing A with averages of five. C. Inverted sunspot curve. D. Days of northerly wind (Greenwich) in year, smoothed.

Regarding curve B (especially), are we obliged to think that this consistent correspondence through sixty years, showing always less northerly wind about maxima than about the adjoining minima, is a matter of chance? If we are to accept the views given in a recent presidential address (from which, I think, there must be considerable dissent), that is how it is to be interpreted.

A systematic inquiry into the configuration of high-pressure systems in Europe about sunspot maxima and minima, especially in the winter half, would, I believe, be fruitful in results.

ALEX. B. MACDOWALL.