

But the successful discoveries, because they are successful, are taken out of the category of schemes when years of untiring application on the part of the inventors have, so to speak, thrust them down the throat of the unwilling practical man. Take the instance of Mr. Bessemer, who was beset for years by difficulties of detail in his great scheme of improvement in the manufacture of steel. As long as he was so beset, the practical men chorused, "He is a schemer; he is one of the schemers; it is a scheme." Supposing that these practical difficulties had beaten Mr. Bessemer, and that they had not been overcome to this day, the practical man would have derided him still as a schemer, although the theory and groundwork of his invention would have been as true under these circumstances as it now is. Fortunately for the world, and happily for him, he was able to overcome these most vexatious hindrances and make his invention that which it is. No one now dares to apply the term "schemer" to Mr. Bessemer or "scheme" to his invention; but it is as true now that he is a "schemer," and his invention a "scheme," as it would have been had he failed up to the present to conquer the minor difficulties. It is a species of profanation to suggest, but I must suggest it, for it is true, that Watt, Stephenson, Faraday, and almost every other name among the honoured dead, to whose inventive genius we owe the development that has taken place within the last century in all the luxuries, the comforts, and even the bare necessities of our daily existence, would, in their day, and while struggling for success, have been spoken of as schemers even in respect of those very inventions of which we are now enjoying the fruits. But I feel I need not labour this point further at a meeting of the Mechanical Section of the British Association—an Association established for the advancement of science. I know I shall be accused of decrying the practical man, and of upholding the schemers. I say most emphatically that I do not decry the practical man. I plead guilty to the charge of decrying the miscalled practical man, and I glory in my guilt; while I readily accept that which I consider the praise of upholding "schemers," and I do so for this simple reason that if there were no schemers there would be no improvement. I think it becomes a scientific body like the British Association to laud the generous effort of the unsuccessful inventor rather than to encourage the cold selfishness of the man who stands by and sees others endeavour to raise the structure of improvement without lending a hand to help, and even sneers at the builders, but when the structure is fully raised and solidly established, claims to come in to inhabit, and being in probably essays, cuckoo like, to oust the builders, and to take possession for his own benefit. One word in conclusion. Can we not devise some means by which consumers of coal may be instructed in, shamed into, or tempted to the economical use of that most valuable material? The Royal Agricultural Society of England, by its judicious efforts for many years past by the institution of trials and the giving of prizes for the best engines, has brought the consumption of coal down from 10 lbs. per horse-power to a little over a quarter of that quantity. Could we not institute a Society which should devote itself to the recording and the rewarding of the performances of steamboats and of fixed engines for land purposes? I am aware it is supposed that there is a difficulty in these cases which does not obtain in the case of portable engines that can be brought for trial upon a dynamometer, and that is, that the power exerted by marine engines varies during the voyage, and is not that which is developed at the measured mile, while in a manufactory it varies according to the conditions of the trade, and to the extent to which the British workman condescends to attend to his work. But there are implements which record the horse-power exerted from moment to moment, and register it on indices as readable as those of an ordinary counter of an engine, or as those of a gas meter. I believe that one of the very greatest incentives to economical working which the owners of steamboats could offer to their engine builders and engineers would be the application of such implements as these. Were they employed, the shipowner would know at the end of the voyage so much horse-power had been exerted as a whole, and that so much coal had been burnt, and that the result, therefore, was a consumption of so many pounds per-horse-power per hour. All excuses of head-winds, and all the aid of canvas to the engine-power, would be eliminated from the calculation. The continual indicator would register truly the work the engine had to do, whether that work was made excessive by contending with head winds, or was rendered light by favourable breezes and the assistance of canvas. In the same way the proprietor of the engine for manufacturing purposes, the cotton mill, the woollen mill, the corn mill, and even the highly irregularly

working rolling mills and saw mills, would be able at the end of the quarter to say: "Notwithstanding all the variations of my trade and rate of manufacture, I know that my engines have exerted so much power, I know that I have burnt so much coal, and that therefore such and such have been the economic results." Assuming that steamboat proprietors and the owners of fixed land engines would go to the expense of applying such continuous recording implements as these to their engines, and would become members of an association for the purpose of visiting and inspecting and of reporting upon their machinery, and of giving prizes to the men in charge for careful attention; prizes to the manufacturers for original good design and workmanship of the engines; and prizes to the proprietors for their public spirit in having bought that which was good instead of that which was bad and cheap, and for having employed intelligent and careful workmen instead of ignorant and careless ones,—I believe within a few years as great an improvement might be seen among the marine and manufacturing class of engines as has been effected by the laudable exertions of the Royal Agricultural Society of England among the portable ones. I think the initiation of some such society as this would be a practically useful result from the meeting of Section G.

## SOCIETIES AND ACADEMIES

### PARIS

Academy of Sciences, July 29.—Mr. Cayley presented the continuation of his memoir on the condition enabling a family of given surfaces to form part of an orthogonal system.—M. de Saint-Venant communicated a note by M. J. Boussinesq on a simple mode of determining experimentally the maximum resistance to sliding in a ductile, homogeneous, and isotropic solid.—M. Yvon Villarceau presented a note on a new theorem in general mechanics.—M. W. de Fonvielle read a notice of the results of observations on recent thunderstorms.—A note from M. P. Volpicelli on the theory of Nicholson's duplicates was read.—M. E. Becquerel presented a note by M. A. Cazin on the quantity of magnetism of electro-magnets.—M. C. Sainte-Claire Deville communicated a note by M. de Tastes on the fall of an aërolite in the commune of Lancé (Loir-et-Cher) on July 23. This fall took place about half-past 5 p.m., with a clear sky and bright sun; it was accompanied by a violent explosion heard over a great extent of country. The course of the meteor was from S.W. to N.E., and it appeared to be double, or to consist of two meteors following a parallel course. A large portion fell and buried itself in the ground to the depth of 1.50 metre.—M. Boussingault read a memoir in continuation of his researches upon the presence of iron in the organism; it related to the distribution of iron in the materials of the blood. The greatest portion is contained in the globules.—M. Daubrée presented an investigation of the meteorites of Ovikaf, with regard to the amount of carbon and of soluble salts which they contain.—M. Berthelot presented a note on the constitution of acid salts in solution; M. J. A. Le Bel a note on the pyrogenated carburets of Pechelbroun; and MM. Girard and De Laire a note on the colouring matters derived from aniline, in reply to a recent communication by M. Lauth.—M. C. Sainte-Claire Deville presented a note of an examination by M. Gorceix of the gaseous emanations of Santorin during the close of the eruption of 1866.

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ERRATA.—Vol. vi., p. 266, 1st col., line 19 from bottom, for "bulk" read "bulb"; line 9 from bottom, for "plane" read "pane;" 2nd col., line 16 from bottom, for "behind" read "between;" p. 267, 1st col., line 20, for "pressures" read "temperatures."