

SCIENCE AND MORALS.

FOR some little time past the intellectual air of Paris has been enlivened by a controversy between men like M. Berthelot, M. Lavisse, M. Anatole France, and M. Gaston Paris, as supporters of the gospel that the disinterested search for truth is a guide to morality, and a reactionary party which has, with surprising dialectics, attempted to sustain a plea of the "failure of science." From the *Times* of Friday last, we learn that on Thursday the reception at the Academy of M. Gaston Paris, the successor of M. Renan as the head of the Collège de France, and one of those who have done most in philological studies to maintain the renown of French science, was the occasion of a signal demonstration against the reactionary, unscientific spirit.

M. Gaston Paris is reported to have said :—

"It will be understood that science, which every day enhances, enlarges, and renders more precise our conception of the world, and which transforms, at the same time more and more effectively, the conditions of our existence by submitting to our laws the matter which was crushing us, inspires an enthusiasm almost religious in those enamoured of it. No one had this cult more deeply rooted in his soul than M. Pasteur. No one claimed more insistently for science the honour and the place to which it has a right, or became more indignant with the stupid misunderstanding which refuses to it the means of action of which it stands in need. In a brief piece of writing, entitled 'Le Budget de la Science,' published in 1868, he adjured his fellow-citizens to take more interest in 'those sacred abodes known under the expressive name of laboratories. Ask that they should be multiplied and adorned. They are the temples of the future. It is there that humanity becomes greater and stronger and better.' He had the joy and the supreme honour to see rise under his invocation, owing to the munificence of the entire nation, the most magnificent of these temples of the future. There he reposes to-day in his glory, and about his tomb has been formed, like an order of the new times, a militant, truly spiritual band which fights under his banner to extend his conquests, and which will remain faithful to the motto which he gave it while working unremittingly—'Pour la science, la patrie, et l'humanité.'"

But, continued M. Gaston Paris, science had more than one method, and he recalled the memorable sitting some twenty years ago when Renan received Pasteur into the Academy, and these two great men exchanged words never to be forgotten, Pasteur proclaiming the grandeur of the experimental method as the only infallible instrument of discovery, and Renan claiming for historic and philosophic criticism the share due to it in the conquest and defence of truth.

M. Gaston Paris went on to say :—

"This science of which Pasteur was the priest and the prophet, this science to which we owe so many marvels, is accused of not having kept certain promises, some of which have been made by representations that it disowns, and others of which can only be realised with time. A special reproach made against it is that it is not yet ready to provide humanity with the moral direction of which it stands in need. Science might reply that it does not extend its empire so far, and that other forces which it does not deny are destined to do in the field of sentiment and action what it does in the field of knowledge. But it can, and rightly, as Pasteur affirmed, lay claim to its large share in this moral direction itself. If, unfortunately, it is not certain that in pointing out in the social instinct the true basis of morals, it assures to this instinct predominance over selfish instincts, it is certain that in drawing tighter the bands that bind men together, in undermining the barriers which still separate them, it renders easier and indicates as nearer at hand the civilisation of the world as a whole. . . ."

"Science, in the circles where it is honoured and comprehended, does not restrict to men of science themselves the moral benefit which it confers. It diffuses in wider circles the love of truth and the habit of seeking it without bias, of recognising it only by unalloyed proofs, and of submitting docilely to it. I think that no loftier or more fruitful virtue can be inculcated in a nation."

THE PHOTOGRAPHIC OBSERVATION OF CLOUDS.

IT is a commonplace to say that the phenomena that present themselves most frequently are also those that are least observed with accuracy and intelligence. The ever-changing aspect of our sky, and the screen of vapour covering that adds charm to landscape and variety to scenery, present numberless opportunities for study and critical examination, but they have long waited for adequate description and representation. It was not till the beginning of this century that any special nomenclature was invented to describe the alterations that take place from hour to hour, and the very slight additions that have been made to this special vocabulary since Luke Howard proposed the three well-known terms of description, show the neglect from which this department of meteorology has suffered. These terms, too, though they have become the common property of all nations, are limited to description, and suggest nothing of the physical causes that determine the appearances he so happily described. Indeed, meteorology in his day was not in a position to push the inquiry with hope of success, and it may even still be urged that the explanations offered to account for some of the recognised types of cloud formation are largely speculative. This neglect of a very charming study has been brought about, not only by the fact that clouds are of ordinary every-day occurrence, and therefore not worth noting, but students of practical meteorology have perhaps too much considered that barometer and thermometer readings are the one thing needful, and have looked to the preparation of a weather chart as a veritable sheet-anchor to maintain and support the position of the science. For hitherto the general character of cloud observation among even painstaking meteorologists has been lamentably insufficient. A rough personal estimate of the percentage of area covered by cloud is frequently all that is given, with very little reference to the distance from the zenith at which these clouds are seen, and consequently neglecting the effects of foreshortening. Altitude, density, direction of motion, character of formation have all been regarded as of small consequence, but it is to be hoped that an epoch of more useful and more exact observation is dawning and possibly we may run into the other extreme, now that attention is being called to the subject, and devote too much time to the consideration of these fleeting appearances, and accumulate more results than can be effectively studied.

It might have been anticipated that artists, who maintain so constantly that they reproduce precisely what they see, would have given us pictures of clouds in some degree approaching to accuracy, and have made the discussion of their forms and characteristics easier for men of science. But as a rule the study of these specialists has scarcely been more exact or painstaking than that of the ordinary public, who, from the causes hinted at, are especially unfitted to apply that wholesome criticism which might have resulted in promoting more accurate representation. We believe there is a case on record in which a painter represented a rainbow with the colours reversed. This was unwise, because a rainbow being a rarer phenomenon than ordinary clouds, it has attracted more attention from the public, and the error was noticed. But faults as egregious too often accompany artistic production of clouds, and pass without censure or remark. Painters may make rain fall from a thin strip of cloud, or from impossible cumulus, and escape without ridicule. But these are freaks it is no longer safe to indulge in.

The artist, too, who paints by sunlight and without the aid of brushes and colours, is often as glaringly incorrect as his more respected and ambitious brother. We have