NATURE

July 14, 1870

Monographs of M. Michel Charles

Par une lettre insérée dans le No. 36 de NATURE, page 192, M. C. Ingelfinger fait appel aux lecteurs de votre Revue pour obtenir quelques renseignements au sujet de "l'Aperçu historique" de M. Charles, imprimé à Bruxelles en 1837. Le travail, qui porte pour titre exact : "Aperçu historique sur l'origine et le développement des méthodes en géométrie, particulièrement de celle qui se rapportent à la géométrie moderne," a été publié par l'Académie royale des sciences de Belgique dans le tome xi. de ses "Mémoires couronnés et des savants étrangers" (in 4to.), et il est très-diffusé aujourd'hui en usage pour procurer des exemplaires. Toutefois, M. Ingelfinger pourra s'adresser, pour consulter ce mémoire, à la Société royale de Londres, qui doit certainement le posséder dans sa Bibliothèque. Vous d'ailleurs la liste des publications scientifiques qui ont paru à l'époque de sa publication : Société royale, Société astronomique, Société royale de littérature, et Société linéenne.

J'espère que ces détails pourront être utiles à votre honorable correspondant.

Bruxelles, le 8 Juillet

A. Lancaster,
Attaché au Secrétariat de l'Académie royale des Sciences de Belgique

In reply to Dr. Ingelfinger's note I may state that many papers by M. Charies on various subjects in the history of Mathematics, are to be found in the volumes of the Comptes Rendus for 1837 onwards. His "Aperçu historique" appeared as a special volume of the Transactions of the Brussels Academy, but was sold as an independent work. It appeared in quarto, and was published in 1837. Like his "Traité de Géométrie Supérieure," it is very rare, and fetches an enormous price. Mr. Quarritch is, perhaps, the most likely bookseller in London to be able to procure it. The German translation by Souchlic is comparatively cheap, and may be readily obtained through Messrs. Williams and Norgate.

Torquay, July 9

G. E. Day

The Specific Heat of Mixtures of Alcohol and Water

In the report of the papers read at the Academy of Sciences, Paris, June 17, which appears in NATURE, it is stated that MM. Jamin and Amaury presented a note on the above subject, in which they point out, apparently as if it were something new, that the specific heat of some of these mixtures rises even above that of water.

Now, more than two years ago, March 26, 1868, we communicated a paper to the Royal Society giving the specific heat of various mixtures of alcohol and water, and drawing special attention to the remarkable fact that the specific heat of these mixtures is not only above the calculated mean specific heat, but that in all those of less strength than 36 per cent. of alcohol, it is higher than the specific heat of water itself. This knowledge of this fact should therefore be old by this time.

An abstract of our paper is printed in Proc. R. S., vol. xvi., p. 337. Subsequently we examined this and various other proper- ties of similar mixtures more in detail, and communicated our results to the Royal Society in a second paper, an abstract of which is printed in Proc. R. S., vol. xvi., p. 333, and the paper in full in Phil. Trans. for 1869, Part II., p. 391.

The insertion of the above in the next number of your valuable journal will greatly oblige

A. Dufre & F. T. M. Page

Westminster Hospital, July 2

Geographical Prizes

Having been chiefly instrumental in causing prize medals to be offered by the Geographical Society for competition among the chief public schools, I do not like Mr. Wilson's letter in your last number to pass without comment.

Geography may be, to use his words, a subordinate branch of education, but I think it is a mistake to hold that it is so only in the sense that it underlies a large part of liberal knowledge. It underlies the study of history. For example, I do not see how a boy could thoroughly understand Biblical history without having acquired a very vivid conception of the geography of Palestine. The same is true for all other histories, ancient and modern. It follows, as a matter of fact, that geography is incidentally taught to a considerable extent in school, and I am sorry to say it is sometimes very ill-taught, as we learnt from the reports of our examiners, but
through some omission, not easily to be explained, if it be not the effect of a rare accident, geographical proficiency has never hitherto been adequately encouraged. Consequently, the Geographical Society has thought it right to step in to supply the needful encouragement. There is another good reason for the introduction of the Society, in the fact that facilities of travel have rendered our interests much more cosmopolitan than formerly, while the public schools of the old-established type, have made no corresponding change in their curriculum. More youths now have had the grand tour of two generations back, and a year or two of early manhood is often spent in America, Australia, and India, where books of travel load our library tables. It seems monstrous that a so-called liberal education should not qualify men to journey themselves, or to read the journeys of others, in an intelligent manner.

Mr. Wilson remarks, and his remark deserves respect, that the morals of Rugby were almost unanimous in rejecting the invitation of the Geographical Society, but I can fairly retort that other scholars no less practised in education and no less competent to decide, pronounced our system of prizes to be a valuable and much-needed institution.

It would be easy to write at great length in support of what we have done, and I might perhaps be expected to say something on the repressive objects of the political and physical geography prizes, but I do not wish to prejudice a discussion in your pages, because I am on the point of going abroad and should be unable to take further part in it.

FRAncIS GALTON

"Kinetic" and "Transmutation"

1. When, in 1854, I wrote for the Reeder the history of the Baconian Philosophy of Heat, I found use, in connection with the subject, the term "dynamical theory of heat," in English, which had been evolved as an equivalent for the expression "mechanische Wärmenatur," current in German. The word "dynamical," already so vague from frequent abuse, corresponded but little, when used in its proper meaning, to the reality of the theory in question; and the same remark applies, with at least equal force, to the word "mechanische," even when in its root in its scope and as often misused. I was thus led to adopt the word "Kinetic" to supersede the above; and that in preference to the current word "cineastic," which, in conjunction with "theory," would imply a tautology.

I am glad to see that Sir W. Thomson and Professor Tait, in their treatises on Natural Philosophy and on Heat, as well as in some remarkable papers, which have appeared in Nature, frequently make use of the same word, "Kinetic," in connection with the theory of heat and of gases, as also in conjunction with the expression "actual energy," originally introduced, I believe, by Mr. Rankine, Sir W. Thomson and Mr. Tait employ the term "Kinetic energy," and from various motives, linguistic as well as strictly scientific, I venture to think that the original wording of Mr. Rankine in the case of "potential energy" should be likewise superseded, viz., "dynamic energy."

2. In the Philosophical Magazine, I have been rated, indirectly, by Professor Challis, (for no mention is made of my name in connection with the subject), for having applied the word "transmutation of rats" as the abbreviated and thoroughly English rendering of the words, "change of the refrangibility of rats, or light," used by Professor Stokes; and as such, reproaching me, for the absence from Nature, the most powerful, and the only conspicuous expression of "transmutation of matter." If, however, an authority had to be cited, it would have been Euler, in whose "Nova theoria tactus et colorum" (Opus. var. argum.) the following passage occurs:—"Curiusdam rationem nonnulla radiis raditum rubrum, et a violacis violacie ad nos pertingentiam, etiam radiis radiis et a violacis violacie ad nos pertingentiam, etiam radiis radiis". It is seen by the incisilens, manifestum est istam transmutationem sua sola reflexione per se non posse.

As I have returned to this subject, I may be permitted to express my astonishment that Professor Challis, who thought it due to him that his name should be mentioned for being the author of the expression "transmutation of rats," should have put his name at all in speaking of the transmutation of Her, schellic rays into Newtonian, a reference to my own share in the rot gote. When I see the same thing being done in so widely circu- lated a treatise as that of Mr. Brooke on Natural Philosophy, and in one intended for even more popular reading, reproducing the teaching of the Polytechnic, I might think of entering a protest, if experience had not convinced me of its uselessness.

C. K. AHN

Parturition of the Kangaroo

I beg leave to call your attention to certain comments in your issue of the 23rd of June on the proceedings of the last meeting of the Royal Geological and Zoological Societies of Ireland. It is usual when parenthetical observations are made in any journal without the customary "Ed.," to ascribe them to the printer's devil. Now, your devil, in commenting on an imperfect report of your Dublin correspondent, would lead your readers erroneously to infer that I had adopted the ideas which he has been pleased to call "absolute nonsense," and takes me to task for saying "that the actual passage of the foetal kangaroo from the uterus to the pouch was not yet proved," I would myself state that my remarks were "in contradiction to the facts observed by the late Earl of Derby's father, and Professor Owen, after elaborate arrangements for the observation, states that 'as parturition took place in the night, the mode of transition to the pouch was not observed.'" (Phil. Trans. for 1834, p. 344.) There have been four observers in this matter extant, worthy of being noticed:—(1) the keeper at the Zoological Gardens, Knowesley, who, according to Lord Derby's statement, saw the young kangaroo born, and that it was placed in the pouch by the paws of the mother (Proceedings of Zoological Society for 1853, p. 132); (2) Professor Owen, as referred to above; (3) Mr. E. C. Hill, who, at thirty yards' distance, saw the kangaroo with her mouth take up what he thought was a stone, open the pouch with her paws, and place it in the marsupium, and that he shot the animal and found a newly-born foetus in the pouch (Proceedings of Zoological Society for 1867, p. 479); (4) M. Jules Verreaux, who, I am informed by M. E. Aix, as having seen the kangaroo remove the fetus from the vulva with her mouth, and place it in the pouch (Annals of Natural History for 1866, p. 216). These all differ as to the actual facts observed, and would seem sufficient to justify me in the statement I had made. That Professor Owen does not consider the question settled, may be inferred from his concluding observations on the subject, "whether the circumstance of the parturition is constant, viz., the dropping on the ground, or whether the fetuses may occasionally be received by the mouth from the marsupium, and disposed to regard as a matter for further observation; but the main fact of the conveyance of the fetus to the pouch means of the mouth may now be held as the more probable (at least the more usual, if not the constant) way in the genus Macropus." (Proceedings of Zoological Society for 1867, p. 479.)

I refrain from any comments, but I thought it right to reproduce the statements which I felt were injurious to me, to the Society to which I have the honour to belong, and to the advancement of science.

JohN BarKer, M.D.

Dublin, July 1

The Extinction of Stars

If you will kindly permit an amateur to rush in where astronomers fear to tread, I shall be glad to offer a few remarks on the above subject.

The progress of science enables us to trace, with a probability almost amounting to certainty, the career of a star from its birth; from the most diffused and obscure stage in its parent nebula; through the stage of primary agglomeration when it shines as our sun; through the process of cooling into a dim and cloudy sphere, such as Jupiter or our earth; until cold rules supreme, and the once glowing orb rolls on, barren and unshining. But when we have reached this stage, we have by no means done with the star. It must continue on its course, and, though in obscurity, it must retain its momentum and its attractive force. Our sun will thus one day travel in the dark place, attended by a cohort of funereal planets, and perpetual night will reign over the solar system. This result appears to be but a question of time, and we are, therefore, led to the consideration that such systems must, in all probability, have been already created and wandering unnoticed. But as extinction is a gradual process, there will be multitudes of stars in various stages of dimness,