May 11, 1913.

MONSIEUR,—Je viens de lire le Compte-rendu de mon ouvrage sur le *Calcul des Probabilités* dans votre estimable revue *Mathematical Gazette*. Je lis à la vingt-huitième ligne: "At page 427 there is a slight misprint, $\frac{1}{2}a^2t$ for $\frac{1}{2}a^2t^2$." A la page indiquée ne figure pas l'expression $\frac{1}{2}a^2t$. Ceci m'a conduit à penser que le redacteur faisait sans doute allusion à la page 428 et qu'il n'en comprenait pas le sens.

Si la vitesse était proportionnelle au temps t, le mouvement serait un mouvement accéléré ordinaire, le hasard n'aurait sur lui aucune influence.

Le problème traité p. 428 est analogue aux problèmes classiques des probabilités (formules de Moivre, Laplace, Poisson,), c'est pourquoi je fais remarquer à la page 429 que je n'ai pas à insister sur les conséquences du résultat, elles sont trop simples.

De même, au No. 608 (p. 431) les écarts de situation sont proportionnels à la puissance $\frac{3}{2}$ du temps parcequ'ils dépendent du hasard; s'ils ne dépendaient pas du hasard ils croîtraient comme le 2e puissance du temps, ce serait le problème classique du mouvement accéléré.

Un résumé de cette théorie des "probabilités dynamiques" a paru en Novembre, 1910, dans les *Comptes rendus de l'Académie des Sciences*. Un autre résumé, beaucoup plus étendu (une quarantaine de pages) est en cours de publication dans les *Annales scientifiques de l'école normale supérieure*. J'ai professé a plusieurs reprises la théorie des probabilités dynamiques dans le cours libre que je professe à la Faculté des Sciences de Paris. Cette théorie est mon œuvre exclusivement personnelle, comme aussi une partie considérable de ce que contient mon ouvrage.

Veuillez agréer, Monsieur le Directeur, mes salutations très distinguées,

L. BACHELIER.

120 Rue Michel Ange, Paris 16.

[Dr. Bachelier is quite correct in saying that the formula in question, part of the investigation commencing at p. 427, occurs on p. 428. The statement is: "La probabilité pour que la vitesse soit v a l'époque t est

$$\frac{e^{-\frac{v^2}{2a^2t}}}{\sqrt{r}\sqrt{2a^2t}}\,dv";$$

a is defined thus: "accélération ou accroissement de vitesse a pendant chaque élément de temps."

It is obvious that the exponent of e is of wrong dimensions. The point is, however, really not very serious, for it is in effect one of notation only. Calling τ the element of time, the result depends on the limiting value of $2na^2\tau^2$ (in relation to that of $2ra\tau=v$) when n and r tend to infinity, and τ tends to zero. It is, however, from the point of view of numerical applications, unfortunate that several of the formulæ given by Dr. Bachelier are open to a similar objection. I hinted at this in my review. C. S. J.]

SIR,—The following riddle may still be of interest:

To fifty-six and hundreds six
The chief of letters add—
He bridged a gap to help the sap
And drive the dullard mad.

I fear, however, that in this iconoclastic age the reference will soon become unintelligible. When I first made up and set this riddle (at the end of a problem paper), I said I was parodying Archbishop Whately's famous and unsolved:

"To five and five and forty-five
The first of letters add,
To find a thing that killed a king
And drove a wise man mad";

and I was surprised to be told afterwards by one of my hearers that he was a great-grandson of the Archbishop.

Quite unintentionally I was responsible for another curious coincidence. The first time I set the question:

"Writing in 1864, Professor de Morgan said he was x years old in the year x^2 A.D. When was he born?"

Several of those who did the question told me that they would be x years old in the year x^2.—Yours truly, F. W. DOBBS.

P.S.—I am unable to verify the numbers given in Archbishop Whately's riddle; but I believe I am right in saying he never disclosed the answer. Perhaps some of your readers will throw light upon it.

THE LIBRARY.

THE Library has now a home in the rooms of the Teachers' Guild, 74 Gower Street, W.C. A catalogue has been issued to members containing the list of books, etc., belonging to the Association and the regulations under which they may be inspected or borrowed.

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ERRATA.

p. 115, line 14; *for* 'her' *read* 'but.'

p. 122, line 5 up; *delete* 'to'; for 'author' *read* 'author's.'

p. 123, line 19; *for* 'red' *read* 'head.'

BOOKS, ETC., RECEIVED.

The American Journal of Mathematics. Edited by F. MORLEY. Vol. XXXV No. 2. April, 1913. 5$ per ann. (Johns Hopkins Press, Baltimore.)

The Reducibility of Maps. G. D. BIRKHOFF. *The H.C.F. of a System of Polynomials in One Variable.* L. L. DINES. *Linear Mixed Equations and their Analytic Solutions.* R. D. CARMICHAEL. *On the Theory of Linear Difference Equations.* R. D. CARMICHAEL. *On the Product of Two Quadro-Quadric Space-Transformations.* HILDA H. HUDSON. *On Some Topographical Properties of Plane Curves and a Theorem of Möbius.* S. LEFSCHETZ. *On a Flat Spread-Sphere Geometry in Odd Dimensional Space.* J. EIESLAND.

Elementary Practical Mathematics. By Prof. J. PERRY. Pp. xiv+335. 6s. 1913. (Macmillan.)

Mathematical Notes. Edited by P. PINKERTON. No. 13. May, 1913. Pp. 143-157. Printed for the Edinburgh Mathematical Society. (Lindsay, Edinburgh.)

School Science and Mathematics. Edited by C. H. SMITH. Vol. XIII. No. 5. May. 1913. 2$ per ann. (Smith & Turton, Chicago.)

A Lesson from the History of Numbers. R. D. CARMICHAEL. *The Teaching of Geometry at Tuskegee.* D. W. WOODARD. *Experiment to show the Physics of the Hammer drawing a Nail.* H. L. F. MORSE. *Bibliography of the Teaching of Mathematics.*

Four-Figure Tables. By C. GODFREY, M.V.O., and A. W. SIDDONS. Pp. 40. 9d. net. 1913. (Cambridge Univ. Press.)