1896, and discusses the structure and origin of the Blue Mountains of the colony. Mr. H. C. Russell's paper, in which he shows that the good and bad seasons follow a nineteen years' cycle, appears in the volume, with the discussion which took place upon it. Among other subjects and and authors of papers are: The Mika or Kulpi operation of the Australian Aboriginals, by Prof. T. P. Anderson Stuart; the cellular kite, by Mr. Lawrence Hargrave; an explanation of the marked difference of the effects produced by subcutaneous and intravenous injection of the venom of Australian snakes, by Dr. C. J. Martin; recent determinations of the viscosity of water by the efflux method, by Mr. G. H. Knibbs; the occurrence of precious stones in New South Wales, and the deposits in which they are found, by the Rev. J. Milne Curran; the rigorous theory of the determination of the meridian line by altazimuth solar observations, by Mr. G. H. Knibbs; an address to the engineering section of the Society, by Prof. W. H. Warren; the machinery employed for artificial refrigeration and ice-making, by Mr. Norman Selfe; and the present position of the theory of the steam engine, by Mr. S. H. Barraclough.

Many of the papers are accompanied by plates, that of the Rev. J. M. Curran being particularly well illustrated.

L'évolution régressive en biologie et en sociologie. By Jean Demoor, Jean Massart, and Prof. Émile Vandervelde. Pp. 324. (Paris: Félix Alcan, 1897.)

To show that the laws of biology are followed in the domain of sociology has been attempted by many writers. Unfortunately, bio-sociological subjects are often taken up by naturalists who have little knowledge of social questions, or by sociologists having but a superficial acquaintance with biological realities, the result being unsound conclusions and exaggerated analogies. With the view to see the subject from different aspects, and produce a composite picture in which neither sociology nor biology is given undue prominence, the authors of this book have collaborated in its production. The result is not altogether satisfactory, for the book is really more sociological than biological, and not good at that. The general conclusions which the authors labour to prove are that evolution is at once progressive and retrogressive, that transformations of organs and institutions are always accompanied by retrogression, and that the same laws hold good in the changes of societies as well as organisms; all the actual forms undergoing transformation, and, in consequence, losing certain parts of their structure. The text of the book is the universal application of the principle of devolution, and in the exposition of it the authors have exercised their ingenuity to the utmost.

The Geographical Journal. Vol. ix. January to June 1897. Pp. viii + 748. (London: The Royal Geographical Society; Edward Stanford, 1897.)

THIS volume of the Royal Geographical Society's *Journal* contains several papers of exceptional interest, among them being Mr. W. L. Sclater's final contribution on the geographical distribution of mammals; a paper on the formation of sand-dunes, by Mr. Vaughan Cornish; Sir Martin Conway's account of his Spitsbergen expedition; two years travel in Uganda, Unyoro, and on the Upper Nile, by Lieut. C. F. S. Vandeleur; Dr. Nansen's statement of the results of his arctic expedition, and his views on the north polar problem; and a paper by the president, Sir Clements Markham, on the voyages of John Cabot. In addition to these papers, the monthly record and a number of special articles furnish a store of interesting information on geographical progress in its widest sense. Large coloured maps and other illustrations accompany the papers, and assist in making the volume valuable.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Electro-Chemical Equivalent of Silver.

IN NATURE, vol. lvi. p. 259, Mr. Griffiths points out that recent comparisons of the values of the mechanical equivalent of heat, obtained by mechanical and electrical methods, suggest that the adopted value of the equivalent of silver may be in error to the extent of 1/1000. This adopted value rests, I believe, almost entirely upon experiments made by Kohlrausch, and by myself with Mrs. Sidgwick in 1882; and the question has been frequently put to me as to the limits within which it is trustworthy. Such questions are more easily asked than answered, and experience shows that estimates of possible error given by experimenters themselves are usually framed in far too sanguine a spirit.

When our work was undertaken the generally accepted number was ·01136, obtained by Kohlrausch in 1873. Mascart had recently given ·01124, subsequently corrected to ·011156. The uncertainty, therefore, at that time amounted to at least 1 per cent. The experiments of Mrs. Sidgwick and myself were very carefully conducted, and we certainly hoped to have attained an accuracy of 1/2000. So far as errors that can be eliminated by repetition are concerned, this was doubtless the case, as is proved by an examination of our tabular results. But, as every experimenter knows, or ought to know, this class of errors is not really the most dangerous. Security is only to be obtained by coincidence of numbers derived by different methods and by different individuals. It was, therefore, a great satisfaction to find our number (*Phil. Trans.*, 1884) (·011179) confirmed by that of Kohlrausch (·011183), resulting from experiments made at about the same time.

It would, however, in my opinion, be rash to exclude the question of an error of 1/1000. Indeed, I have more than once publicly expressed surprise at the little attention given to this subject in comparison with that lavished upon the ohm. I do not know of any better method of measuring currents absolutely than that followed in 1882, but an ingenious critic would doubtless be able to suggest improvements in details. The only thing that has occurred to me is that perhaps sufficient attention was not given to the change in dimensions that must accompany the heating of the suspended coil when conveying the current of $\frac{1}{3}$ ampere. Recent experiments upon the coil (which exists intact) show that, as judged by resistance, the heating effect due to this current is $2\frac{1}{2}^{\circ}$ C. But it does not appear possible that the expansion of mean radius thence arising could be comparable with 1/1000. RAYLEIGH.

Terling Place, Witham.

Acetylene for Military Signalling.

IN conjunction with Captain J. E. S. Moore, I have been making some experiments on the use of acetylene in signalling lamps. We have obtained such good results with the very primitive apparatus at present employed, the light is so brilliant, and the requirements so portable, that it seems well worth considering whether acetylene could not take the place of the lime-light where portability is an object.

The apparatus consists of a 5-oz. bottle, carrying a two-hole rubber cork; water drips on to the carbide from a wide glass tube, holding some $2\frac{1}{2}$ oz., and furnished with a connection of rubber tube and a screw-clamp to act as regulator. The gas escapes from a straight tube to the lamp, being trapped on the way by a wider piece of tube, into which the smaller tubes are corked at either end; this makes a sufficient condenser for any water vapour. The gas tube enters the lamp through the base, and the gas burns from an ordinary 0000 Bray. The generator, when charged, weighs one pound, and after a couple of minutes, during which time the action is a little irregular, will give a steady light for thirty or forty minutes; on more than one occasion, indeed, it has run out without the clamp being touched after first adjustment. We find an ordinary lamp small for the heat produced, and have had to rivet the soldered parts; but increased ventilation would be easy to arrange. Of course for permanent work the generator would have to be arranged in metal; even then it would probably be the lightest gas-supplying arrangement, for the illumination, yet produced.

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