

arcs, the calculation of light for interior and exterior places, and concludes with tables giving the reflecting powers of various surfaces, and the horizontal illumination required for different places.

The last part illustrates the construction and application of auxiliary plant, including steadying resistances, choking coils, transformers, safety appliances, &c.

The book is intended chiefly for students. As such it might be improved by including a little more of the theory of the arc, of which the author says practically nothing. Very few engineering students will find sufficient time to study works such as "The Electric Arc," by Mrs. Ayrton, unless they make the study of arc lamps their speciality.

The second part will form a good advertisement for the A.E.G. Company's lamps, as most of the diagrams represent designs made by this firm. But although it is quite easy to deduct the principles of action of other lamps from the diagrams given, one does not like to see in a text-book the productions of one manufacturer only, as it reduces the work almost to a catalogue. Of great interest is Foster's hot-wire arc lamp, although its commercial value has yet to be proved.

The most useful part of the book is the third one, which will be welcomed by many students who are able to read German. Also the fourth part contains much useful matter.

The book is practically free from printer's errors. The few which occur may easily be detected by even the most elementary reader.

Taken as a whole, the pamphlet will be found a useful addition to electrical engineering literature.

H. BOHLE.

Transactions of the South African Philosophical Society. Vol. xv. Part v. Catalogue of Printed Books, Papers, and Maps relating to the Geology and Mineralogy of South Africa to December 31, 1904. By Miss M. Wilman. Pp. 283-467. (Cape Town, 1905.) Price 12s. 6d.

THIS excellent bibliography represents months of patient labour spent on a bewildering but necessary task, and now happily carried to a successful termination. The whole civilised world appears to have had something to say on African geology. The labour entailed in drawing up these lists, which easily supersede all others, will therefore be obvious. The author has had, indeed, to exercise considerable acumen in discarding numerous papers, &c., often containing mere references to geology, in order to bring the lists even within their present compass. As it is, a few works, since they are mentioned in earlier lists, have had to be included, although they add little to geological literature. The title is generally sufficient to warn the inquirer.

Part i. deals with works on the general geology of South Africa, part ii. contains a list of geological maps, while part iii. is exclusively devoted to works on meteorites. The print is clear, and the names of authors are distinctly marked in Clarendon type.

W. G.

Problems in Practical Physics. By F. R. Pearson, M.A. Pp. 30. (Edinburgh and London: Oliver and Boyd, 1905.) Price 6d.

THESE problems are intended to accompany practical work in a laboratory, and should serve to give practice in working out results. The subjects on which examples for solution are set include the parts of physical science studied in a first year's course. Teachers of mathematics may find the booklet useful, as it will provide interesting applications of simple mathematical principles to practical problems coming within simple laboratory experience.

NO. 1880 VOL. 73]

LETTERS TO THE EDITOR.

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Terminology in Electro-physiology.

My attention has been directed to a letter in your columns (p. 5) commenting upon the ambiguous use made in physiological literature of two opposed terms, "negative" and "electropositive."

To me also it seems a misfortune that this ambiguity has ever arisen, nor do I see any necessity why it should be allowed to persist. There is no obvious reason why, in scientific papers, the terminology of the physicist should not be adhered to. The "negativity" of a point is detected by means of the current which flows towards it, or tends to flow towards it, through some form of external indicator connecting it to the point which is spoken of as "positive." These terms, and these terms alone, adequately express the facts of all the experimental observations made. Any other terminology differing from this is necessarily based upon some inference as to the mode of causation of the currents detected. Since it is the causation of these currents which is the main crux of the research work undertaken in this subject, the admission of such an inference seems a certain road to the confusion of ideas.

In all cases where an effort has to be made to carry home to an audience the more exact ideas existing in the author's brain, in all cases where parables are not only admissible but necessary, I think the terms suggested by Dr. Waller are of extreme value. Anyone acquainted with the explanatory use he has made of them in his "Animal Electricity" will agree. Whilst sincerely admiring his profoundly clever method of administering large doses of knowledge by means of this and similar parables, I have observed two things. In the first place, that duller wits, hugely mistaken, sometimes assess his knowledge as mainly one of parables. In the second place, that less expert persons are apt to carry conclusions derived from parables to a bitter and unjustifiable extremity.

Sheffield University.

J. S. MACDONALD.

The Leonid Meteors, 1905

THE remarkable displays of these meteors observed in 1903 and 1904 may naturally raise the expectation as to whether the approaching Leonid epoch will exhibit an abundant fall of shooting stars. Observers, it is true, will have to contend against the impediment offered by the light of the gibbous moon; but, it may be remarked, this can only affect the smaller class of meteors, as the brilliant apparitions of 1866, 1867, and 1886 were witnessed at a similar phase of our satellite.

The Leonid events of the past two years afford striking illustrations of the meteoric cycle of nineteen years, being associated respectively with the Leonid meteor displays of 1865 and 1866, and the present November gives ample promise of furnishing another example of the same period.

Unlike the Leonid falls of 1865 and 1866, that of November 14, 1867, was brilliantly reproduced on the first completion of this cycle on the morning of November 15, 1886, the spectacle being of extraordinary splendour (NATURE, vol. lxi., p. 491).

The Leonid maximum of 1905 will fall on the night of November 15, and, according to calculations by the present writer, will be visible both over Europe and America. The shower will be of second-class order, that of 1866 being regarded as of first, and will commence early in the night, the first maximum occurring on November 15 11h. G.M.T. From this hour up to about three o'clock on the morning of November 16 the Leonids will probably gradually increase in numbers, the second maximum of the night becoming due on November 15, 15h. 10m. The final maximum on November 15 occurs at 21h., and will consequently be visible to American observers only.

Dublin.

JOHN R. HENRY.