labour-saving device for the dairyman it has been ranked with the separator.

Certain statements will want correction in a future edition. We are told, for instance, that " the covering of land in summer prevents the temperature from rising so high as to destroy the organisms of the soil."   E. J. R.

OUR BOOK SHELF.

Astronomischer Jahresbericht, Vol. viii. Die Literatur des Jahres 1906. By A. Berberich. Pp. xxxvi+671. (Berlin : Georg Reimer, 1907.) Price 21 marks.

ASTRONOMERS are fortunate in the matter of having their literature catalogued, for, in addition to the volume published by the Royal Society for the International Council, we have this very excellent annual, instituted by the late Dr. Walter F. Wislicenus, which has now reached its eighth volume.

The contents of the present issue deal with the literature of the year 1906, and it only requires a cursory glance to indicate how important it is that such a catalogue is in existence, considering the great mass of work that is being turned out every year and published, not only in all sorts of journals, but in various languages.

The very arduous task of collating and cataloguing is now annually being successfully accomplished by Dr. Berberich and his co-workers, and an important feature about the publication is its early issue.

In the present volume, which contains no less than 1961 separate brief abstracts of published papers, accompanied by a complete name-index, some minor changes have been made.

Thus all references to publications with regard to minor planets are brought together under one section number, and the tabular statement of their observation is here omitted, as it appears in full in the Berlin Astronomical Year-book.

The literature relating to comets is now divided between two sections, while one section includes the whole of meteor-astronomy.

In spite of the above and other alterations, the volume is not reduced in size, for longer abstracts are given of works of greater importance.

The value of this publication to astronomers cannot be overestimated, and it behoves everyone interested in this science to support it, so that the continuation of future issues may be assured.

Lehrbuch der theoretischen Elektrochemie auf thermodynamischer Grundlage. By J. J. van Laar. Pp. xii+307. (Leipzig : W. Engelmann; Amsterdam : S. L. van Looy, 1907.) Price 6 marks.

THE present volume differs greatly in character from those to which we are accustomed from the pen of Dr. van Laar. His " Thermodynamik in der Chemie " and his " Lehrbuch der mathematischen Chemie " are so formal in their nature, so mathematical in their dress, and so slightly connected with the facts of observation, that the majority of chemists can have derived little benefit from them, excellent though they may be of their kind. Here the author adopts a different method; the mathematical deductions have the clearness and conciseness which might be expected, but everywhere the experimental data are brought into the foreground, so that the electrochemist with a modest mathematical equipment may hope to gain a clear view of the thermodynamical theory of his science.

The book is divided into twelve chapters, of which the first deals with electrical units, chapters ii.-iv.

with conductivity, chapter v. with diffusion, chapters vi.-x. with electromotive force, chapter xi. with polarisation, and chapter xii. with capillary electric phenomena.

A good account of the work of Kohlrausch is given in chapter iii., and the recent researches of Walden and others on the conductivity of non-aqueous solutions, and of Lorenz on fused electrolytes, are well summarised in chapter iv. Chapter vii., on the partition equilibrium of electrolytes, contains much that is novel.

Altogether it may be said that the book is readable, original, and suggestive.

Coal. By James Tonge. Pp. vii+275. (London : Archibald Constable and Co., Ltd., 1907.) Price 6s. net.

THE author recently published an excellent little work on coal-mining for the use of students. It is disappointing, therefore, to find that in writing a book on coal for the general reader he has been less successful. The work appears to have been hastily compiled, and the proofs carelessly revised. For example, the Ruhr appears as " Rurh," Courrières as " Courrieries," Anzin as " Auzin," Resicza as " Kesicza," and Karwin as " Kirwin."

There is a useful chapter on the preparation of coal for the market; and the chapter on the botany of the Coal-measure plants is excellent, though somewhat technical for the general reader. Both these chapters are admirably illustrated. The chapters on the British and foreign coalfields, on the valuation and uses of coal, on the production of heat from coal, and on the waste of coal, contain, however, little that is not better set forth in the report of the Royal Commission on Coal Supplies, in the valuable digest of that report published by the *Colliery Guardian,* in Prof. Flux's revised edition of Jevons's work, or in other works dealing with coal. Of such works many have recently been published, for we cannot agree with the author that " it is now many years since a work on coal was presented to the public."

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 Speed of Racing Animals.

IN NATURE, March 14, 1907, p. 463, there is an article giving the results obtained by Prof. Kennelly, of Harvard, from an examination of racing records. There is no harm in again directing the attention of your readers to these results. Prof. Kennelly's paper was sent July 6, 1906, to the American Academy of Arts and Sciences, and published in the Proceedings in December, 1906. It is entitled " An Approximate Law of Fatigue in the Speeds of Racing Animals." His general result is given in a question set by me in an examination in practical mathematics, January, 1907. Here is the question :—

If t seconds is the *record* time of a race of y yards ; the law $t = cy^n$ seems to be wonderfully true for all record races of men and animals excepting men on bicycles ; n is the same number in all cases. c has a special value in each case, men walking, running, skating, swimming, or rowing ; horses trotting or galloping or pacing.

(1) For any particular kind of race it is found that when y is increased by 100 per cent., t is increased by 118 per cent. ; find n.

(2) For men running, when $y = 600$, t is 71 ; find c in the above formula. Express s, the average speed of each race, in terms of y.

(3) Assume that an animal has a certain amount of endurance E which is exhausted at a uniform rate during