

upon the drink problem that one based upon the consumption of liquor would have, but perhaps is not entirely without value. It certainly is not if it tends in the slightest way to throw the temperance problem into the hands of social reformers. Better heated tenements, warmer overcoats, and more nourishing food may have more to do with it than we think.

EDWIN G. DEXTER.

If the writer of the notice, by any remarks of his, has given annoyance to Prof. Dexter, whose industry and careful compilation of facts have never been called into question, he would greatly regret it. But in so far as that notice has been the means of procuring from the author a most interesting letter, he can only congratulate himself.

One might call attention to many significant conclusions that could be drawn from Prof. Dexter's curves; but perhaps the most prominent is that, apparently, the greatest number of assaults are committed when the populace is the most sober. This is an entirely unexpected conclusion. In this country, we have been repeatedly told that drunkenness is the main cause of crime, especially of crimes directed against the person; and yet a careful elaboration of statistics, compiled by an eminent authority, completely demonstrates the fallacy of such an argument when applied to the City of New York.

THE WRITER OF THE NOTICE.

### Deceptive Bibliographic Indications.

AUTHORS' reprints of scientific papers are indeed a boon to the worker in science, especially to him who is distant from a large library. But their usefulness to the recipient who is himself a writer of works, and not a reader only, depends to a large extent on whether the reprints are or are not provided with correct and complete bibliographical indications of their origin. Occasionally one gets a reprint without date, with no reference to the original volume, page, and plate numbers, and even it may be without the name of the periodical from which it is an extract. But in the majority of reprints distributed nowadays, an attempt has been made to give the requisite information. Success is not often attained, it is true; still one is grateful for the good intention.

The imperfections hitherto mentioned are only too easily observed, and the task of making them good, though wearisome, is not impossible if one lives long enough. But among the reprints sent to me during the last two months are numerous instances of an error more difficult to detect, and more annoying in its results. To all appearance the reprints in question give the requisite bibliographic indications, their paging seems to be that of the original, and the type shows no signs of having been disturbed. But in each case one or more of these appearances is a specious falsehood. Here are some of the misstatements observed. A reprint pagged 141-147 originally appeared on pp. 142-148. A paper that occurs on pp. 170-175 of the publishing society's *Bulletin* has had the type spaced out so that the pagination of the reprint is 170-176. A reprint has the original pagination carefully given in [ ] on each page, and runs from 367 to 370; the original pages were 367-371, and half of every page has been shifted to the preceding. Sometimes the wrapper of the reprint gives one set of numbers, while the pages themselves bear another set, each purporting to be the original.

The last case is not so objectionable, since it is clear there is a mistake somewhere. But in the other cases it is only by chance that one detects the error. Each seems trivial in itself, and a single instance hailing from some petty local club would be passed over with a laugh and a grumble. But examples have come to me alone, during a few weeks, from the publications of the German Geological Society, the Zoological Society of France, the Natural History Museum of Paris, the International "Congress of Zoology," the Geological Survey of Canada, and the *Geological Magazine*.

This contempt for veracity is chargeable to the printer, not the authors; and the remedy lies in the hands of the editor. If the editors of our scientific publications would but realise the perpetual inconvenience that is caused by a little want of thought, and would but give clear and definite instructions to their printers to place the required bibliographic indications at the head of each reprint, to retain original pagination, and never to shift the type without duly stating the fact—then the

amount of time saved by the numerous workers who have to rely upon authors' copies would be far greater than most people have any idea of.

F. A. BATHER.

January 31.

### Specific Heat of Marble.

IN 1898 we published, in the *Proceedings* of the American Academy of Arts and Sciences, a paper containing a discussion of certain mathematical problems arising in the study of the flow of heat in prisms, together with an account of an investigation of the conductivities of a number of specimens of glass and of marble.

In this paper we called attention to two groups of fine-grained marbles, which have conductivities (nearly independent of the temperature within wide limits) of 0.0068 and 0.0076 respectively, while Carrara Statuary marble and many of the British marbles—as Messrs. Herschel, Lebour and Dunn have shown—have conductivities of only 0.0051.

Within a few weeks we have found time to determine the specific heats of all our marble blocks, and have obtained the results given in the table which follows.

These specimens, each of which is described in our former paper, had been lying untouched in the warmed laboratory for about ten months, and were, therefore, neither abnormally moist nor abnormally dry.

Variety of Marble.	Sp. Gr.	Conductivity.	Average sp. ht. between 25° C. and 100° C.	Sp. ht. per unit volume.
"Carrara Statuary"	2.72	0.00501 0.00509	0.213	0.579
"Mexican Onyx"	2.71	0.00556	0.211	0.572
"Vermont Statuary"	2.71	0.00578	0.210	0.569
"American White"	2.72	0.00596	0.214	0.582
"Egyptian"	2.74	0.00623	0.212	0.581
"Sienna"	2.68	0.00676	0.215	0.576
"Bardiglio"	2.69	0.00680	0.218	0.586
"Vermont Cloudy White"	2.75	0.00681	0.210	0.578
"Vermont Dove Coloured"	2.74	0.00684	0.208	0.570
"Lisbon"	2.75	0.00685	0.211	0.580
"American Black"	2.68	0.00685	0.214	0.574
"Belgian"	2.75	0.00755	0.206	0.567
"African Rose Ivory"	2.75	0.00756	0.212	0.583
"Tennessee Fossiliferous"	2.71	0.00756	0.214	0.580
"Knoxville Pink"	2.73	0.00757	0.212	0.579
"St. Baume"	2.70	0.00761	0.210	0.567

The results of twenty-two determinations made between different temperature limits with a number of pieces of Carrara Statuary marble artificially dried at a temperature a little above 100° C. are well represented by the following formula

$$Q = 0.1848(t - 25) + 0.00019(t - 25)^2,$$

in which Q represents the amount of heat in calories required to raise one gramme of this *dry* marble from 25° C. to the temperature *t*.

Jefferson Physical Laboratory,  
Harvard University, U.S.A.

B. O. PEIRCE.  
ROBERT W. WILLSON.

### The Coccidæ of New Zealand.

MR. H. FARQUHAR, in your issue of January 11, p. 247, has some interesting remarks on the Coccidæ of New Zealand, which, however, need to be slightly modified in the light of recent researches. The genera of Coccidæ peculiar to New Zealand are as follows:—

(1) *Phenacoleachia*, Ckll. (type *Leachia zealandica*, Maskell). One species. This is an extremely distinct genus, and may be regarded as the type of a distinct subfamily (Phenacoleachiinæ), differing from the Coccinæ by the compound eyes of the male, wherein it is allied to the Ortheziinæ.

(2) *Coelostomidia*, new name (*Coelostoma*, Maskell, not of Brullé, 1835, nor *Coelostomus*, McLeay, 1825). Five species. All the supposed species of *Coelostomidia* found in Australia belong to *Callipappus*.

(3) *Lecanochiton*, Maskell. Two species. A very distinct genus.

The two following genera were thought peculiar to New Zealand, but are now known from elsewhere:—

(1) *Eriochiton*, Maskell. The only species referred to this genus from elsewhere than New Zealand is *E. cajani*, Maskell, which is in reality a *Ceroplastodes*; but Mr. E. E. Green (in litt.) tells me that he has just received a genuine *Eriochiton* from Australia.

(2) *Solenophora*, Maskell. This is now known from North America and Ceylon.

I have no doubt at all that *all* of the truly native species of New Zealand Coccidæ are strictly endemic. The only apparent exception is that of *Eriococcus multispinus*, Maskell, which is said to occur in Australia on *Acacia*; but the Australian form was separated by Maskell as a distinct variety (var. *laevigatus*), and is doubtless a valid species. T. D. A. COCKERELL.

Mesilla Park, New Mexico, U.S.A., January 26.

### The Fitting of the Cycle to its Rider.

THERE is much interesting theory in your paper on the bicycle fitted to the rider in crank and gear, by Mr. Crompton (p. 87). But what is the practice? I agree with Mr. Crompton's theories, if a slight modification be made. I think that the crank-length should be proportional not only to a man's thigh-length, but to the weight of a man's leg. The loss of power in a bicycle, as soon as it travels fast, arises from the loss of momentum at each up and down stroke of the leg according to the well-known equation:—

$$M = mv.$$

Where  $M$  = momentum.

$m$  = mass.

$v$  = velocity.

A slender-built man with a light, thin (even although long) leg, can afford a higher value for  $v$  because his constant for  $m$  is low.

Not so the strongly-built man with a high constant for  $m$ . He must keep his velocity down, or  $M$  rises in value and there is a loss of power at each stroke when travelling fast.

Let me give an illustration. A few days ago I was riding an 8' crank and 84 gear machine rather fast on a down grade. I travelled swiftly but easily. In front of me was a low-g geared cyclist, his feet flying round at a high speed, the bicycle frame quivering with the velocity of his strokes, the cyclist breathing hard with his exertions. As I overhauled him I heard a pedestrian remark against his scorching. Certainly he was scorching in the sense of strongly exerting himself, but his exertions were mainly expended in the lost momentum of each stroke. The only remedy for this is a high gear.

Admitting the advantage of a high gear, the necessity for long cranks follows, otherwise the cyclist has not the power to face hills, winds, or bad roads. Two inches increased crank-length gives an enormously increased power of propulsion. I find that with 8' cranks and 84 gear I can climb hills easier than with an ordinary roadster, say with 6½" cranks and 64 gear.

The increased comfort and safety on a bicycle fitted as Mr. Crompton recommends are very remarkable and pleasing. The ampler free motion does away with most leg-weariness and saddle-soreness. The long, powerful cranks give one a command over the bicycle that is equally satisfactory up-hill or down-hill. One gets over the ground with a long, easy swing. Compared with the ordinary bicycle, it is like the outside edge and the inside edge in skating; or like rowing with sliding or fixed seats.

For track riding it seems possible that short cranks and high gears may give the best return for the muscular power exertion expended, since  $v$  is kept down by the high gear, and  $m$  probably represents the limb of an active young athlete weighing perhaps 10 stone. And, since there is little resistance to be overcome, the long crank may represent an unnecessary high lift of the leg.

Conversely, the greatest advantage is to be derived from long cranks and high gears in a hilly and difficult country, or where the winds are strong, as here at the Cape, and when the rider has a heavy, powerful leg.

Long cranks and high gears necessitate an alteration to the frame of the bicycle that is troublesome to makers. And hence,

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I suppose, the curious tabooing of the subject in the too-often interested bicycle literature of the day. D. E. HUTCHINS.

Kolara, Kenilworth, nr. Cape Town, January 7.

### Telephones and Lightning Discharges.

IN NATURE of February 8, Sir G. G. Stokes suggests an arrangement for hearing a lightning flash in a telephone. To hear the corresponding earth current, it is only necessary to put a telephone in connection with the gas and water pipes of a house. These pipes seem to suffice to entrap the corresponding earth currents, which practically enable the listener to hear the lightning. Flashes invisible in the daylight are quite noisy in the telephone. A. R. HUNT.

Southwood, Torquay.

### THE GEOGRAPHY OF EUROPE.<sup>1</sup>

EUROPE is undoubtedly the most refractory of the great divisions of the earth to get within the limits of a geographical treatise. The mass and variety of data of high scientific accuracy are so overwhelming that it is impossible for any one man to make himself acquainted with even a small fraction of the whole, and the compilation of a book on Europe, even on the generous scale which two volumes permits, cannot in the nature of the case be much more than a compilation of earlier compilations. In unskilled hands it could not fail to become a heterogeneous collection of facts; but Mr. Chisholm has brought to bear experience and expert knowledge in the choice and co-ordination of his material, and the result is a credit to British geography. It shows a great amount of reading amongst original, and sometimes not very accessible, works in many languages, which few compilers would have considered it necessary to undertake in preparing a volume in a popular series. Numerous references are given throughout to the sources of information, and we hope that the second volume will be furnished with a bibliography of the best works dealing with Europe as a whole, and with its larger regions.

The plan of the "Compendium" has always been to take the country rather than the continent as the unit, and by doing so its scientific character has suffered, because the only possible element of unification has been ignored. Mr. Chisholm has endeavoured, with considerable success, to improve the plan of his volume by an excellent introductory chapter dealing with Europe in general, although this, to our mind, is too short; while the individual countries appear to be described in disproportionate detail. In a series obviously intended to convey information rather than to inculcate geographical principles this disproportion is, however, inevitable, and it is doubtless recognised more fully by the author than by the critic.

The guiding principle which has been kept in view throughout all the descriptions of countries is that the character of a country at the present time is due to the influence of the physical structure of the land upon the historical development of the nation. Hence a good many geological and historical facts are mentioned; but they are mentioned, not as facts for their own sakes, but as working causes accounting for the present adjustment of peoples to lands. The application of this principle has led Mr. Chisholm to commence his detailed description with Italy, which he treats with great fulness on account of its historical importance. He gives to the central Mediterranean peninsula nearly twice as much space as to Russia or France, and a third more than to the German empire. Interesting as Italy is, and vast as was its influence on all Europe, we confess that we should

<sup>1</sup> Stanford's "Compendium of Geography and Travel (New Issue), Europe. Vol. 1. The Countries of the Mainland (excluding the North-west)." By Geo. G. Chisholm, M.A., B.Sc. Maps and Illustrations. Pp. xx + 736. (London: Edward Stanford, 1899.)