

this singular mixture, but with so bad a result that from that time (nearly four years ago) the mere recollection of the experiment produces again not only the indescribably nasty taste of the *chimó*, but sometimes even the vomiting, which was the end of my first and only attempt to use this luxury of the *Merideños*. And for this very same reason I hasten to put an end to this note.

Caracas, March 18

A. ERNST

#### Anchor-Ice

THE formation of anchor-ice has attracted a good deal of attention in Upper Canada, although I am not aware of any efforts having been made to describe theoretically the cause of its formation. Prof. H. V. Hind, some time of Toronto, alludes to it in a paper read before the Geological Society (*Proc. Geol. Soc.*, xxi. p. 128), and I believe the late Sir Wm. Logan, director of the Canadian Geological Survey, also brought the matter before the same Society, though I cannot trace up the paper, and Mr. Keefer, C.E., of Ottawa, read a paper on this subject before the Canadian Institute (*Canadian Journal* (new series), vii., p. 173, 1862).

The conditions under which anchor-ice forms appear to be those mentioned by Dr. Rae, as far as my own observation goes, and Prof. Hind remarks, in the paper alluded to, that it is not uncommon for the seat-nets off the Labrador coasts to be frozen, in water as deep as 60 feet, and that the anchors of these nets frequently bring up masses of frozen sand. The most interesting question in connection with this subject seems to me to be, Does the ice form, from the precipitation of the very minute ice-particles, in passing over the rapids, or does the intense cold of the ground favour the formation of *raze*, as it is locally called, independently of the floating ice-particles passing over the *stones*? I have never known it to form on clay or alluvial bottoms.

There is another form of anchor-ice to be found in the great northern lakes, which floats in large sheets at a considerable depth under the surface of the water. During the construction of a large breakwater on the Georgian Bay I had a great deal of trouble from large floes of this ice, which seemed to be floating in layers at various depths in water 14 feet deep. The local opinion was that this ice was formed on the extensive rocky shoals which abound on that coast, and more particularly in the neighbourhood of the work on which I was engaged, and that the floes became detached by storms and the hammering of the surface-ice upon them. Whatever may have been the cause of their formation, they were very destructive in their force upon the timber caissons which were being sunk.

Edinburgh, April 22

ALAN MACDOUGALL

THE SONGS OF BIRDS.—D. W., of Freiburg im Breisgau, writes that Mr. C. C. Starling (*NATURE*, vol. xxi. p. 590) will find an elaborate paper, "Ueber Vögelstimmen, &c." (especially on their musical properties, with many notes), by Prof. Opper, of Frankfurt-on-Main, in the monthly journal *Der zoologische Garten*, February, 1871 (vol. xii. No. 2), published by the Zoologische Gesellschaft of that place.

#### GEOLOGICAL SURVEY OF THE UNITED STATES

IT is now about a year since the Congress of the United States took seriously in hand the question of the national scientific surveys and made a complete reorganisation of them, consolidating the geological work into one general Geological Survey of the United States, under Mr. Clarence King as director. Some time had necessarily to elapse before much fruit could be seen from the new tree. It was especially needful in the first place to justify the large expenditure of money required for the organisation, by showing that not merely pure science, but the industrial and commercial interests of the country were materially aided by the Survey. Consequently while ordinary geological surveying has not been neglected, the chief strength of the staff has been expended upon economic geology, and more especially on the deposits of iron, lead, silver, and gold. Some of the great mining districts of the West have been very carefully explored,

and the results will be embodied in the Annual Report. It is understood that Mr. King's general plan is to arrange his forces in two divisions, one charged with the investigation of the economic geology, the other with general geology or the geological map. The second division will no doubt be mainly engaged in the Western States and Territories, which will be parcelled out into large districts each under a special officer. Thus there will probably be a corps placed on the Pacific slope, another on the Great Basin, a third on the Plateau country, and a fourth in the eastern mountain ranges, or Rocky Mountains proper. But besides this general distribution of the staff there is an intention, we believe, to devote attention to special problems further east, and, in a most liberal and thoroughly scientific spirit, to employ for their study the best geologists who can be found in these regions to undertake the duty.

Rumours of this last branch of Mr. King's scheme have been rife for some months past in the Eastern States; and, like most rumours, they have doubtless exaggerated the true state of the case. In a recent number of *NATURE* (vol. xxi. p. 197) attention was directed to his alleged proposal to extend the operations of his staff not only over the Western Territories and other parts of the public domain, but also over the Eastern and long-settled States. In spite of the serious and emphatic protest made by Prof. Dana against this proposal, we spoke of the proposal itself as a kind of joke, meant chiefly to flutter the geologists of the East, but with no serious thought of claiming in any way jurisdiction in the Eastern States. It appears, however, that the Director, in answer to official inquiries, has written a letter, which has been laid before the Senate by the Chairman of the Committee on Appropriations, to be printed in connection with a joint resolution authorising the extension of the Survey. In this letter he states that the Survey as at present constituted, being understood to be limited in its application to the national domain or public lands, cannot possibly present a general exposition of the mineral resources of the whole country, and that in spite of its labours for their enlightenment, "the people of the United States must remain ignorant of the extent, nature, and broad practical relations of their mineral possessions." He therefore insists on receiving from Congress authority "to work over the whole United States and to study its whole economical geology," summing up his arguments by declaring that "briefly and finally, in my belief, the question of the passage or defeat of the resolution under consideration is the question whether it is or is not desirable and needful for the people of the United States to thoroughly know the nature, extent, and uses of their mineral possessions."

In Mr. King's view the work of his Survey should be to collect statistics of the annual output of minerals, to publish a yearly volume giving full information of the progress of the mineral industries, "to actually and directly aid in their development," "to promote the wise and guarded influx of foreign capital," and generally to study the mineral wealth of the country in its extent, in the relations of one kind of deposit to another, and in the relations of all the deposits to industrial and commercial progress.

Mr. King no doubt knows intimately the temper of Congress, and understands precisely the tactics to be pursued to get from that body an appropriation of \$340,000. He is aware that he will be much more likely to gain his end by showing that he can augment the number of dollars in the national exchequer than by trying to persuade the Legislature to believe in the importance of discovering the southern limits of the Northern Drift. He must be allowed to be a better judge of how to get a large vote from Congress than any quiet on-looker here can pretend to be. Yet even from his own point of view there are some aspects of his letter to which, with all deference to his well-known tact and