

vance has been made in this year's volume, both as regards size and the number of articles included; the pages of the calendar which were formerly devoted to the dates of meetings of Societies have here been left blank for the sake of persons desiring to make notes or memoranda.

Valuable hints on all topics are given both to amateurs and professionals, no single department of the work, as far as we can find, having been neglected.

A brief summary of the year's work is given by the editor, touching upon the gradual merging of the brown and purple tones into those of darker and more engraving-like type, the advancement made in flash-light photography, and the new method of platinum-printing. The summary concludes with an obituary of those who have passed away since the last issue.

Next follow series of articles, commencing with one on "Iron Printing," by the editor, and continuing with those contributed by Abney, Burton, Perry, Piazzi-Smyth, and many others.

Twenty pages are devoted to an epitome of progress during the year 1888, and then are added a list of useful receipts, standard formulæ, reference tables, &c.

The Photographer's Diary and Desk-book for 1889.

Compiled by the Editor of the *Camera*. (London: Published at the Office of the *Camera*, 1889.)

OF the various diaries brought out for the present year, that issued by the proprietors of the *Camera* will be sure to give great satisfaction to photographers, both amateur and professional. This differs from other photographic diaries in two respects: in the first place, it is much larger, there being plenty of room for notes on experiences of various kinds, results of manipulating, developing difficulties, and many other details well worth recording, which are often so useful and valuable for reference. In the second place, there is a great amount of useful information condensed in the first fifty pages. Besides various tables and processes of developing, printing, &c., information similar to that included in almanacs and other diaries is inserted; the tables and standard formulæ relating to photography being printed in larger type, to enable the worker, when in the dark room, to refer to them. This diary is a very complete and useful publication, and, as a book of reference, is most handy.

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 Climate of Siberia in the Mammoth Age.

A SHORT time ago I was discussing with my friend Mr. Henry Seebohm the various problems connected with the distribution and migration of birds in Siberia, about which he has collected so many facts. One fact which he mentioned to me seemed to have a much wider interest than a merely ornithological one, and to illustrate from an unexpected quarter a conclusion which you have allowed me to urge in your columns, and which forms a notable postulate in my recent work on "The Mammoth and the Flood." I mean in reference to the climate of Siberia during the Mammoth age. The views I have advanced on this subject are not my own. I have merely followed in the footsteps of almost every recent Continental authority, especially the authorities with the greatest claims to attention—namely, the Russian naturalists who have visited Northern Siberia. They maintain—and I think the position is unassailable—that during the Mammoth period that district which is now a bare *tundra*, on

which neither in summer nor winter could herds of pachyderms find food or shelter, was marked by a temperate climate, and was probably occupied by forests to the very borders of the Arctic Ocean.

This view, which is supported by so many facts, was finally established when it was shown by Schmidt and others that rooted trunks of trees are found in the beds containing Mammoth remains far north of the present range of trees, and that southern forms of fresh-water mollusks, such as the *Cyrena fluminalis*, are also found preserved in the same beds in Siberia far to the north of any place where they will now live. These facts are consistent only with the former existence of a temperate climate in Siberia.

It is interesting to meet with support for this position from the present avifauna of the Palæarctic region. Mr. Seebohm, who has an unrivalled collection of skins, illustrating the ornithology of this region from Britain to Japan, assures me (and, in fact, he showed me the evidence) that certain birds—notably the jay, the nuthatch, the marsh-tit, coal-tit, and long-tailed tit, the great and little spotted woodpecker of England and Japan, and in one case of Northern China—are virtually undistinguishable. Similarly, the hazel grouse of Japan resembles that of the Pyrenees, and the nutcracker of Japan and China is like that of Western Europe. While this is so, the forms of these same birds found in the intervening district of Siberia differ very materially, and have, I believe, in almost every case, been treated as specifically distinct. This is assuredly a very interesting fact. Both Britain and Northern Japan are in the same zoological province—namely, the Palæarctic region, over which there is a singular constancy of types and forms, and yet we find that in certain birds the forms at either extremity of the province are closely allied, while the intermediate form differs. This is at one with the fact that the climate of the two extremities is very similar, and that of the intervening district is very much more severe in the winter. We can hardly doubt that the general adherence to a normal type which marks the fauna and flora of the Palæarctic region (and which was even more marked, and amounted, so far as we know, to identity, in the Mammoth period) is due to the fact that formerly, and in every probability in the Mammoth period, an equality of conditions prevailed throughout. This equality has been maintained at the extremities of the region, with the result of maintaining the old forms and types unaltered; while it has changed and grown more severe in the intervening region, with the corresponding result of altering the types there. The conservatism of forms at either end of the province proves unmistakably a conservatism of conditions. This is assuredly a very interesting independent proof, if proof be now needed, that the climate of Siberia was once much more temperate throughout, and like that of Britain and Japan, and this doubtless in the Mammoth age.

I may add that it seems to me very nearly certain that this change of climate in Siberia was the cause of the conversion of what were once sedentary birds there into birds that migrate to South Africa and elsewhere—a migration which has been very well illustrated by Mr. Seebohm. That the date of the commencement of this migratory tendency is not very remote in time is shown by the fact that the birds have not been more differentiated, notwithstanding the very various conditions prevailing in their several winter-quarters. I believe myself that in the Mammoth period, when the climate of Siberia was temperate, there was no need for these tremendous migrations, which were, no doubt, originally induced by the necessity for finding food in winter; but that most, if not all, of these migratory birds were then either stationary in Siberia, or were only local migrants, like so many of our own birds are now.

Mr. Seebohm, in his recent work on the Charadriidæ, has invoked the Glacial epoch to account for the facts presented by that singularly distributed genus. I know of no Glacial epoch in Siberia before the present. The last epoch there, as we can test and prove by the presence of the undecayed carcasses in the frozen ground, was the period when the Mammoth lived. It was when that period closed (and as I claim to have proved closed very rapidly) that the present Arctic conditions of the Siberian climate were introduced, and I would urge it was from this date that the *present* laws controlling the migration of Siberian birds arose.

This seems an inference of some importance; and when the ornithological history of the eastern half of the Palæarctic region is written in detail, it will very probably be shown that the