

province where I have collected in summer; that is, Winnipeg, Lower Fort Garry, Selkirk, Shoal Lake, Carberry and Boissevain. As, according to Preble, it is distributed northwest to York Factory and Great Bear Lake (N.A.F. No. 22, p. 134), it is to be looked for in all parts of Manitoba.

The *crucifer* is easily recognized by the dark St. Andrew's cross on its back; whereas, the *septentrionalis* has only a number of long blotches or stripes.

Though its piercing "*prreep prreep*," from the chilly pond, in early springtime is familiar to all, very few have seen the originator of the noise or know that it is a tiny frog that makes this small steam-whistle. While uttering it, his throat is blown out like a transparent bladder and is nearly as big as himself. At Shoal Lake, in 1901, I found them still singing in the first week of July. The note is more rattled than that of *H. crucifer*. The Peeper is in full song about the first of May; they are very abundant; sometimes there are hundreds of them singing in one pond, with their noses above water; and yet, any one who succeeds in seeing one while

it sings may congratulate himself upon having achieved a difficult exploit in woodcraft.

A specimen that I took at Lower Fort Garry, August 22, 1904, was a brilliant grass-green on all its upper surface; but this, Dr. Stejneger said, was merely an individual variation.

#### COMMON TOAD,

*Bufo hemiophrys* (Cope).

The Common Toad is abundant everywhere from Winnipeg and Shoal Lake to Brandon, from Boissevain to Winnipegosis, and, probably, throughout the province. Its spring note is a soft trilling, uttered about twice a minute and lasting about three seconds each time.

An interesting article on the homing power of the Common Toad appears in *Guide to Nature* (Oct., 1918, p. 142). The writer, F. H. Sidney, mentions instances of marked Toads returning to their home places from distances of 3 to 10 miles, to which they had been carried; and doing this within a few days.

## AN OTTAWA BEACH OF THE CHAMPLAIN SEA.

By E. M. KINDLE.

### INTRODUCTION.

Before the advent of the science of geology men lived in what was supposed to be a completed or dead world. Except for the wagon ruts in the roads and a few other minor alterations by man the earth was believed to have been created, just as we see it, a few thousand years ago. Historical geology has enabled us to peer "far back into the night of time." In place of the finished world of a few generations ago we now recognize a constantly changing world which has been tenanted by an endless succession of plants and animals, each unlike and a little in advance of those which preceded it. The geography of to-day we now know to be no more permanent than the cloud forms of yesterday. Familiarity with geological concepts has contributed enormously to mobility of mind and broad intellectual hospitality. The man who can visualize clearly the physical geography of eastern Canada as it was some ten thousand years ago is prepared to comprehend as well as to meet and direct the great changes incident to the evolution of the social, economic, and political world in a way that his brother who still lives in the finished world of yesterday cannot. It is perhaps something more than a coincidence that the science of geology and the principles of political liberty first took root in England.

In the light of these considerations it should be clear to the non-professional reader that historical geology has a broad cultural value which will well repay one for the trouble of acquainting himself with the salient features of his local geological environment. There are few localities where the recent chapters in the geological history of the continent can be more easily read than in the Ottawa district. This is because the Ottawa and St. Lawrence valleys were invaded by the sea at a very recent period, geologically speaking,—perhaps not more than 10,000 years ago.

### AN ANCIENT SEA BEACH.

The deposits of the latest marine invasion of the Ottawa valley are of two distinct types, fine textured blue clay and beds of sand. The sand deposits, which are widely distributed throughout the Ottawa river valley, represent, frequently and perhaps generally, deposits of an ancient sea shore. These beaches are not of the type which the reader may have seen at Cape Anne or some other rock bound part of the exposed Atlantic coast where a ridge of granitic boulders six or eight feet high shows unmistakably the border of the sea and the prowess of its waves. The beaches of the arm of the Champlain or Pleistocene sea, which invaded the Ottawa and St. Lawrence valleys shortly after the retreat