Genetic relationship.

In areas which have relatively recently been raised above the sea, and in areas which have recently been covered with an ice-cap, the river systems are young or adolescent, and lakes are numerous. Through the action of the ordinary agencies of disintegration and denudation lakes continually tend to disappear, their outlets being cut down, and their basins being filled up with detrital matter and organic growths. Hence in mature river basins there are relatively few lakes, unless the river system has been rejuvenated by mountain growth.[1]

base with an inorganic acid ; that is, the word "salt" comprises such compounds as calcium carbonate, sodium sulphate, magnesium chloride, etc., whilst sodium chloride will be referred to as such or as "common salt." Similarly, the words "saline" and "salinity" are to be understood as applying to total dissolved solids and not to an individual salt, whether sodium chloride or any other. As regards the term "alkaline," it will suffice for present purposes to define alkaline waters as those which hold an excess of sodium carbonate (with more or less potassium carbonate) in solution.

[1] This genetic history of lakes and river basins is well outlined by Professor Davis in the following extracts (*Science*, vol. x. pp. 142–143, 1887) :—

"When a new land rises from below the sea, or when an old land is seized by active mountain-growth, new rivers establish themselves upon the surface in accordance with the slopes presented, and at once set to work at their long task of carrying away all of the mass that stands above sea-level. At first, before the water-ways are well cut, the drainage is commonly imperfect : lakes stand in the undrained depressions. Such lakes are the manifest signs of immaturity in the life of their drainage system. We see examples of them on new land in Southern Florida ; and on a region lately and actively disturbed in Southern Idaho, among the blocks of faulted country described by Russell. But as time passes, the streams fill up the basins and cut down the barriers, and the lakes disappear. A mature river of uninterrupted development has no such immature features remaining. The life of most rivers is, however, so long, that few, if any, complete their original tasks undisturbed. Later mountain-growth may repeatedly obstruct their flow ; lakes appear again, and the river is rejuvenated. Lake Lucerne is thus, as Heim has shown, a sign of local rejuvenation in the generally mature Reuss. The head waters of the Missouri have lately advanced from such rejuvenation ; visitors to the National Park may see that the Yellowstone has just regained its former steady flow by cutting down a gate through the mountains above Livingston, and so draining the lake that not long ago stood for a time in Paradise Valley. The absence of lakes in the Alleghany Mountains, that was a matter of surprise to Lyell, does not indicate any peculiarity in the growth of the mountains, but only that they and their drainage system are very old.

"The disappearance of original and mountain-made lakes is therefore a sign of advancing development in a river. Conversely, the formation of small shallow lakes of quite another character marks adolescence and middle life. During adolescence, when the head-water streams are increasing in number and size, and making rapid conquest of land-waste, the lower trunk-stream may be overloaded with silt, and build up its flood-plain so fast that its smaller tributaries cannot keep pace with it : so the lakes are formed on either side of the Red River of Louisiana, arranged like leaves on a stem ; the lower Danube seems to present a similar case. The flood-plains of well-matured streams have so gentle a slope