参考译文：

湖中的水

Where does the water in a lake come from, and how does water leave it? Water enters a lake from inflowing rivers, from underwater seeps and springs, from overland flow off the surrounding land, and from rain falling directly on the lake surface. Water leaves a lake via outflowing rivers, by soaking into the bed of the lake, and by evaporation. So much is obvious.

湖里的水从哪里来，又流向哪里去呢？湖中的水来自于河流的水，地下水的渗透以及温泉，还有从四周地面流进来的水，另外还有直接降到湖面的雨水。湖中的水通过向外流的河流，渗透进河床以及蒸发离开湖泊。这些都是显而易见的。

The questions become more complicated when actual volumes of water are considered: how much water enters and leaves by each route? Discovering the inputs and outputs of rivers is a matter of measuring the discharges of every inflowing and outflowing stream and river. Then exchanges with the atmosphere are calculated by finding the difference between the gains from rain, as measured (rather roughly) by rain gauges, and the losses by evaporation, measured with models that correct for the other sources of water loss. For the majority of lakes, certainly those surrounded by forests, input from overland flow is too small to have a noticeable effect. Changes in lake level not explained by river flows plus exchanges with the atmosphere must be due to the net difference between what seeps into the lake from the groundwater and what leaks into the groundwater. Note the word "net": measuring the actual amounts of groundwater seepage into the lake and out of the lake is a much more complicated matter than merely inferring their difference.

当考虑到水的含量的时候问题就会变得更加复杂：水通过上述方式流进和流出的具体含量是多少？发现河流水量的流进和流出量是测量河水进出容量的一种方法。和大气水分的交流是通过发现雨水中得到的水(按雨量的测量规格计算)和那些通过其他方式测得水损失量的蒸发的水的差别来计算的。对于大多数的湖来说，特别是那些被森林环绕的湖，从四周流进湖中的水的含量很少以至于可以忽略不计。湖中水平面的变化不能被河水和大气水量变化的净差量所解释是因为地下水的渗入和渗出。注意一下“净”这个词:测量真正的地下水渗入和渗出量比仅仅推断它们的差量要复杂的多。

Once all this information has been gathered, it becomes possible to judge whether a lake’s flow is mainly due to its surface inputs and outputs or to its underground inputs and outputs. If the former are greater, the lake is a surface-water-dominated lake; if the latter, it is a seepage-dominated lake. Occasionally, common sense tells you which of these two possibilities applies. For example, a pond in hilly country that maintains a steady water level all through a dry summer in spite of having no streams flowing into it must obviously be seepage dominated. Conversely, a pond with a stream flowing in one end and out the other, which dries up when the stream dries up, is clearly surface water dominated.

一旦所有的这些信息都收集到了，那么判断一个湖的水流量是由表面蒸发决定的还是由地下水进出量决定的就变得可能了。如果前者大，那么湖泊就是一个表面水决定的湖，如果是后者，那么它就是一个渗透水决定的湖。有时候常识会告诉你这两种可能性哪一种是对的。比如说一个多山地区的池塘在整个干燥的夏天都保持着稳固的水含量，而并没有河流流进这个湖泊，那么显然它是一个渗透水决定的池塘。相反，一个池塘有河流流进和流出，河水干枯的时候池塘就干枯，那么这就是一个表面水决定的池塘。

By whatever means, a lake is constantly gaining water and losing water: its water does not just sit there, or, anyway, not for long. This raises the matter of a lake’s residence time. The residence time is the average length of time that any particular molecule of water remains in the lake, and it is calculated by dividing the volume of water in the lake by the rate at which water leaves the lake. The residence time is an average; the time spent in the lake by a given molecule (if we could follow its fate) would depend on the route it took: it might flow through as part of the fastest, most direct current, or it might circle in a backwater for an indefinitely long time.

不管怎么说，湖泊是在不停地流进和流出水，它的水不会停留在湖里，或者说不会长久的停留。这个会提升湖泊的停留时间。停留时间指的是特定水分子在湖中停留的平均时间长度，通过计算湖水流量流出湖泊的速度来计算。停留时间是一个平均数，这个时间是特定分子沿着特定路线走过所花的时间，它可能是最快最直接的那一部分，或者在某个回流中花上很长时间。

Residence times vary enormously. They range from a few days for small lakes up to several hundred years for large ones; Lake Tahoe, in California, has a residence time of 700 years. The residence times for the Great Lakes of North America, namely, Lakes Superior, Michigan, Huron, Erie, and Ontario, are, respectively, 190,100,22,2.5, and 6 years. Lake Erie’s is the lowest: although its area is larger than Lake Ontario’ s, its volume is less than one-third as great because it is so shallow-less than 20 meters on average.

停留时间变化非常的大，从小湖的几天到大型湖泊的几百年。加利福利亚州的Tahoe湖的停留时间就长达700年，北美大型湖泊的停留时间如Superior， Michigan，Huron， Erie， 和 Ontario 湖分别是 190，100，22，2。5 和 6 年。Erie 湖是最低的，尽管它的湖面比 Ontario 湖要大，它的容量少于后者的三分之一因为它的平均深度还不到 20 米。

A given lake’s residence time is by no means a fixed quantity. It depends on the rate at which water enters the lake, and that depends on the rainfall and the evaporation rate. Climatic change (the result of global warming?) is dramatically affecting the residence times of some lakes in northwestern Ontario, Canada. In the period 1970 to 1986, rainfall in the area decreased from 1,000 millimeters to 650 millimeters per annum, while above-average temperatures speeded up the evapotranspiration rate (the rate at which water is lost to the atmosphere through evaporation and the processes of plant life).

The result has been that the residence time of one of the lakes increased from 5 to 18 years during the study period. The

slowing down of water renewal leads to a chain of further consequences; it causes dissolved chemicals to become increasingly concentrated, and this, in turn, has a marked effect on all living things in the lake.

一个给定的湖泊的停留时间是一个确定的值。它取决于水流进湖的速率，而水流进湖的速率取决于降雨量和蒸发速率。气候变化(全球变暖的结果？)戏剧性的影响着加拿大西北部的 Ontario 湖群中的一些湖泊的停留时间。在 1970 到 1986 这段时间里，这个地区的降雨量由 1000 毫升降到了 650 毫升，而同时平均温度的上升提升了蒸发的速率（这个速率指的是水蒸发到大气的速率以及植物的这一过程的速率）。在这段研究时间内停留时间的研究结果已经从 5 年提升到了 18 年。湖水的缓慢更新导致了一系列后果，它导致了溶解的化学物质更加集中，反过来会对湖中的生物造成显著的影响。